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SPECIAL ISSUE ON GROUPWARE

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VOLUME 9, NUMBER 10



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SPECIAL ISSUE ON GROUPWARE

INTRODUCTION

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All Together Now

Collaborative computing doesn't come in a box with a Lotus label. It exists in cyberspace, in the corporate infrastructure, in any of a thousand groupware utilities and, essentially, in the company's culture. This special issue identifies the pathways and pitfalls that mark the route to corporate collaboration.

OVERVIEW

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Getting a Grip on Groupware

In this era of cross-functional collaboration and global teams, tools that enable groups to nullify the boundaries of time and geography are fast becoming a hot commodity.

By Mickey Williamson



The big
picture 32



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NOTES VERSUS THE WEB

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Open to Debate

Though the differences between Notes and the Web are diminishing, each still has distinct advantages. Business needs should determine whether you choose one or the other—or both.

By Alice Dragoon

APPLICATION DEVELOPMENT

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Taking Notes to the Next Level

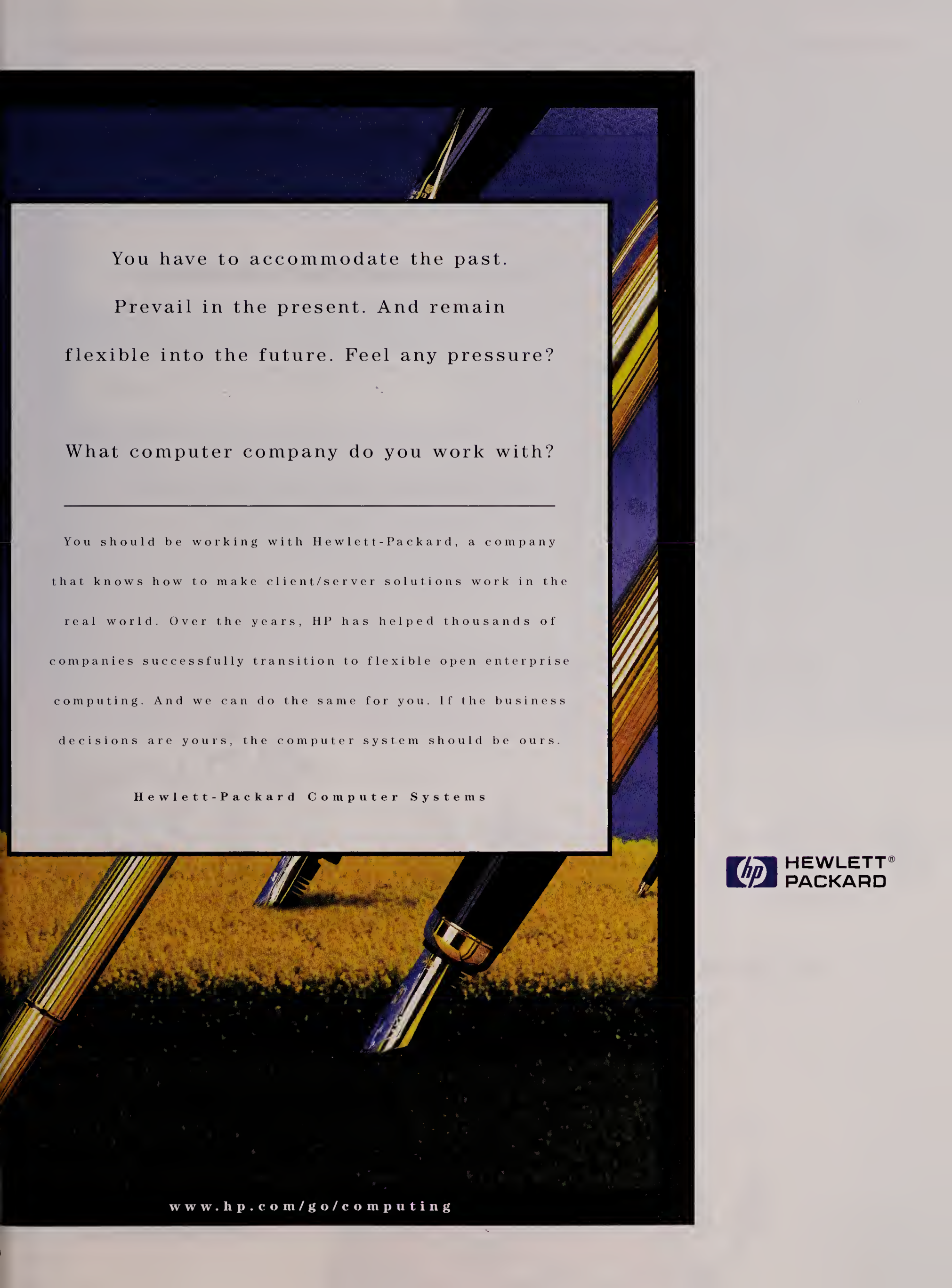
Deploying Lotus's groupware to the enterprise requires software, programmers, cash and support from upper management. And the burden of proof falls squarely on IS's shoulders.

By Tracy Mayor

Moving
on up 54

MORE ►►►





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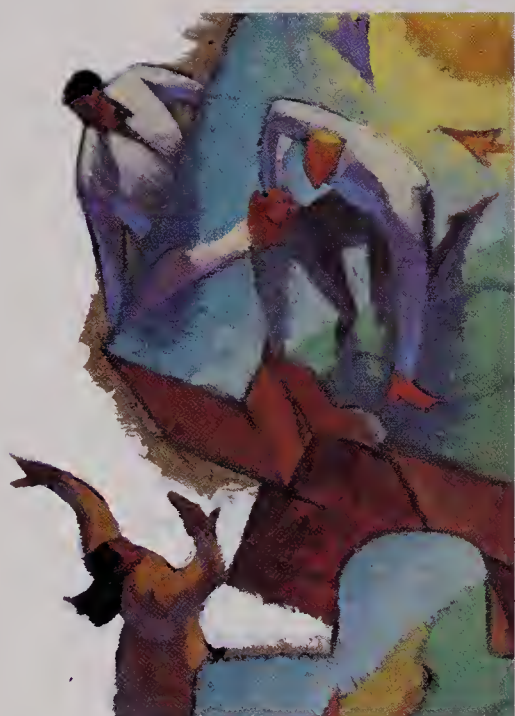
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The people puzzle 64

SPECIAL ISSUE (CONT.)

PEOPLE ISSUES

64

A Little of That Human Touch

If your destination is the utopia of corporate collaboration, you've got to discover and manage the behavioral and organizational factors that drive and derail many groupware efforts.

By Carol Hildebrand

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HUMAN FACTORS

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THINK TANK: SOFTWARE AS SOCIALWARE

If software is to be successful, we must pay attention to the social and behavioral changes it engenders.

By Tom Davenport

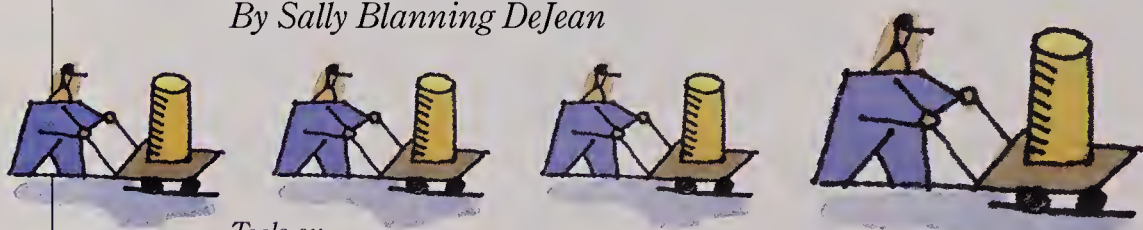
THIRD-PARTY PRODUCTS

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STATE OF THE ART: NOTABLE ADDITIONS

As a testament to the increasing importance of Notes, the market for third-party tools has grown enormously in the last three years, creating a wealth of add-on products for Notes developers and administrators.

By Sally Blanning DeJean



Tools on parade 74



Group dynamics 14

PUNDIT IN RESIDENCE

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CIO LIGHT: THE LONE RANGER

To hell with working together! If it can't be done without the interference of others, it probably isn't worth doing at all.

By Ezra Poundcake



Going solo 88

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- Profile: Notes and the Web
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- Friendlier skies
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I just got back from *CIO*'s Enterprise Value Retreat, an annual event at which senior executives explore the notion of using IT to deliver value to the enterprise. There's no question that CIOs—at least the ones I've been talking to—think primarily about business goals and what they can do to further them.

But this is one tough job. There's big money at stake, and investing in the wrong technology strategy can have dire consequences for both the future of the company and the career of the CIO. The trouble is, everything's a moving target. To-

day's standard could be tomorrow's white elephant. As one speaker at the conference said, five years ago it wasn't too hard to come up with ideas for improving the business; the hard part was finding a technology that could make it happen. Now the technology choices are almost overwhelming. The hard part is coming up with the *right* ideas for your business in your market at your stage of growth.

CIO's mission has always been to help you discover the ideas that will bring success to your organizations. As the magazine's new editor, I'd like to reaffirm this mission and renew our commitment to you, our readers—senior executives involved in the strategic application of IT. I'd also like to take this opportunity to describe some recent changes within *CIO*'s editorial group.

Lew McCreary, who with founding editor Marcia Blumenthal established and evolved the focus, tenor and quality of *CIO*'s editorial content over the past eight years (and who last year created our new supplement, *WebMaster*), is CIO Communications' new editorial director. In this capacity, Lew will oversee the development of all of the company's editorial products and services.

Developing closer ties with our readers is high on our list of priorities. John Whitmarsh, who joined *CIO* a little over a year ago, will be on the road much of the time in his new position as editor at large. He will help us improve our coverage by meeting with IT executives and other outside constituents to better understand the challenges and opportunities you face.

I will focus my attention on making *CIO* serve you better, both through the pages of the print publication and through other media and forums (such as our Web site at <http://www.cio.com>). Along with the rest of the editorial staff at *CIO*, I am committed to this goal. If you have questions, suggestions or comments of any kind, please feel free to contact me at 508 935-4731 or by e-mail at lundberg@cio.com.

Abbie Lundberg



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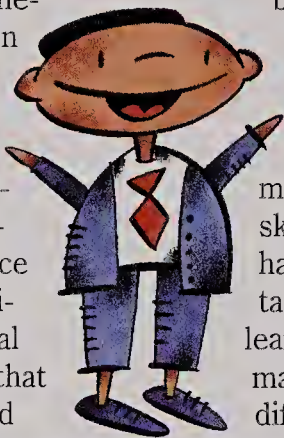
TRENDLINES

TEAM BUILDING

LEARNING TO SHARE

New Lotus Notes users can be pardoned for concentrating on the technology at the expense of softer teamwork issues. After all, one must know how to use the stuff before one can reap any benefits. It's natural, then, for newly minted online teams to be concerned with what happens when somebody pushes button X while holding down button Y.

But according to teamwork facilitators, new groupware users also face a host of communications and cultural stumbling blocks that can be exacerbated



by the electronic medium. For example, employees may be frustrated that they can't use nonverbal cues like shrugs in an online discussion; as a result, team members must hone their writing skills more sharply. Perhaps even more important, new teams must learn a new, collaborative manner of working that differs sharply from the

autocratic work style that prevails at many companies.

To address this technology-driven problem, the Lotus Institute, a Cambridge, Mass.-based research, education and development think tank associated with Lotus Development Corp., has offered the solution one would expect from a company of techies—more software. The institute has created a software and services package called TeamRoom to serve as a map for the organizational issues that groupware brings to the fore. "Our belief is that these days, people work on multiple teams," says Chris Newell, executive director of the institute. "But what are the rules of the road for electronic teaming?"

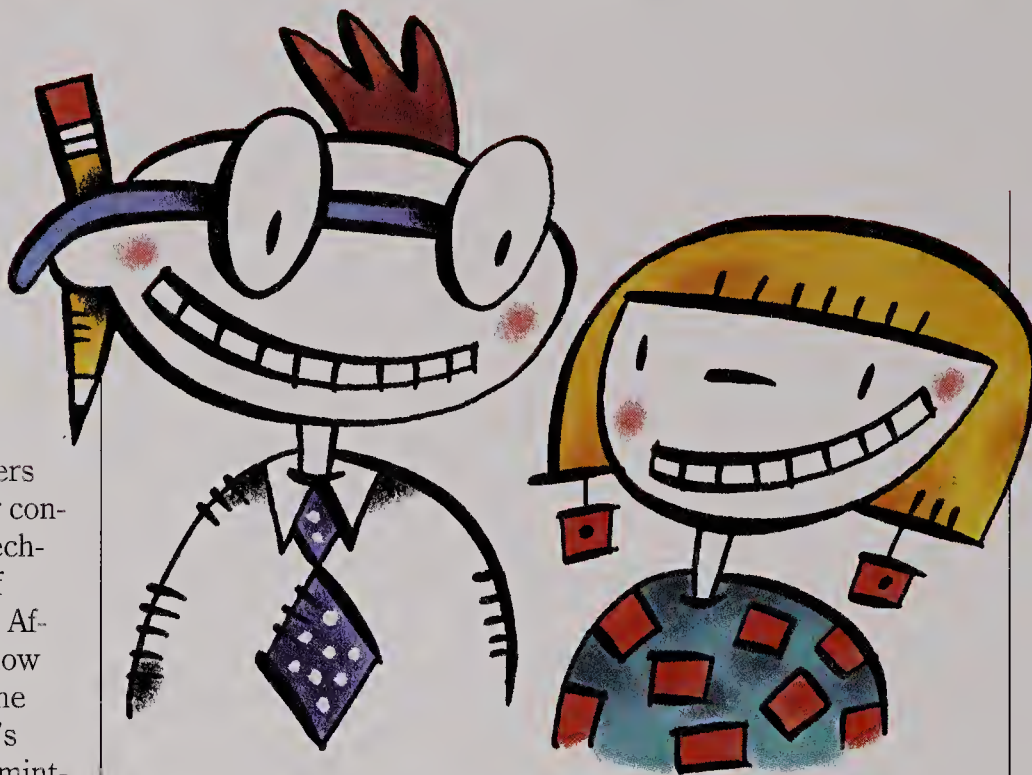
Newell says the institute found in the course of its research that the new emphasis on collaboration changes the parameters for sharing, leadership and many cultural issues. The organization then gathered its knowledge of how good teams operate and developed TeamRoom, which is designed to help groups decide on the norms of behavior for their new,

collaborative work style.

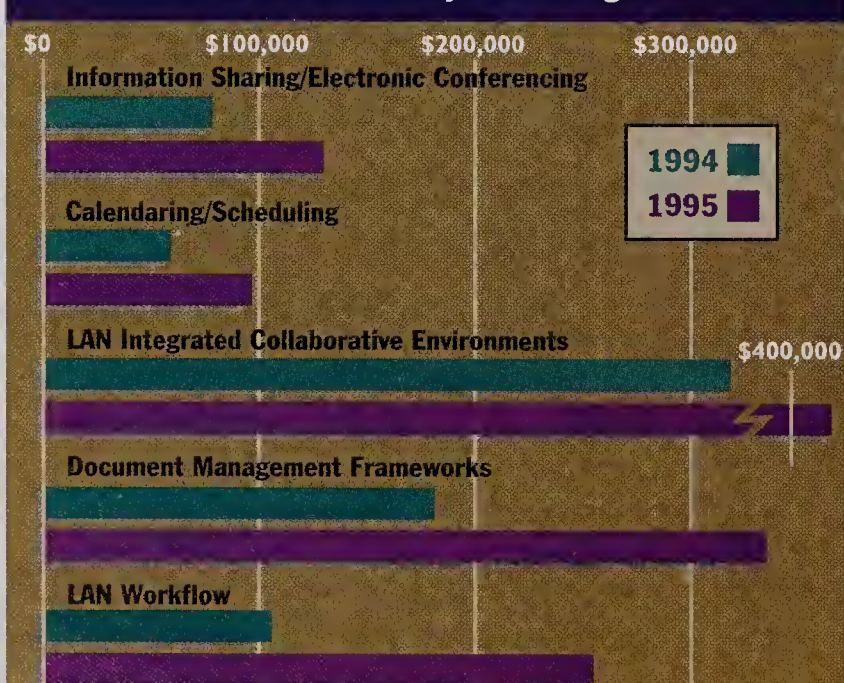
The Notes-based application is what Newell calls "a template with organizational and behavioral components built into it." Yet the package is not a typical shrink-wrapped plug-and-play application. It must be used with a facilitator who acts as both coach and software guide and customizes the package to fit each team's unique goals and objectives. Newell says TeamRoom helps people understand what to expect and how to behave when working with groupware.

Newell cautions that TeamRoom should not be used as a substitute for building an atmosphere of trust and sharing through face-to-face interactions. "We won't even let people use the software unless they have a face-to-face sit-down as a team and walk through the package," he says. Used properly, though, TeamRoom can hasten the effort to launch groupware successfully. Creating a trusting environment takes time and work, but the faster a team builds a collaborative work ethic, the faster it will get paybacks.

—Carol Hildebrand



Worldwide Collaborative Computing Applications
Software Revenues by Market Segment



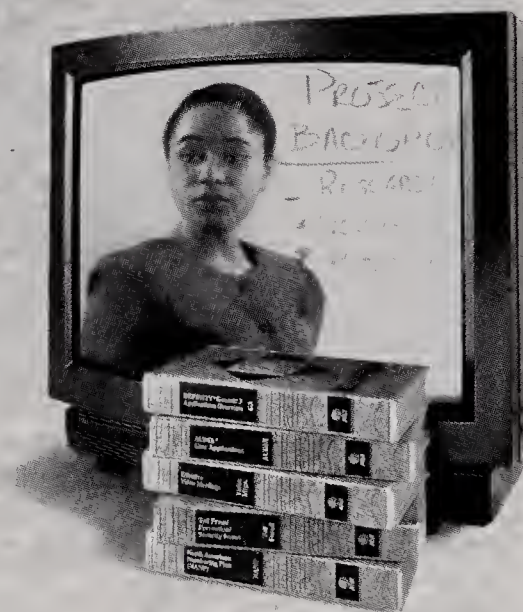
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TRENDLINES

PROFILE

A DOUBLE DOSE

Pharmaceutical maker Eli Lilly and Co. will expand access to its internal Web site from 4,000 to 16,000 users this year, but that doesn't suggest a dire prognosis for the company's Lotus Notes installation. (See related story, Page 42.)

Sheldon C. Ort, director of IT for Project Management at Indianapolis-based Lilly, still prescribes Notes to facilitate interactive discussions and coordinate preparation of group documents. He says Lilly also requires the high security and collaborative features of Notes for coordinating responses to questions from different countries' drug regulatory agencies in the complex drug-approval process. The company has 700 Notes users worldwide, and this number may grow to 1,500 in 1996.

However, the Web will be the company's primary means of communicating with employees. The online daily corporate newsletter is indexed on its Web site, and employees can access the corporate calendaring system, company phone books and mail directories as well as internal discussion groups on the Web. Lilly is developing a Web interface that will let researchers access proprietary computational chemistry pro-

grams from a Macintosh or PC rather than from a more expensive workstation.

John K. Swartzendruber, an information consultant in Lilly's Internet Services Group, says the group is considering using the Web to access a document management system; they've proved it can be done, but the capability isn't as extensive yet as they'd like. "If we could get away with one tool, we would do it, but we don't think the Web can do everything [yet]," he says.

Although Notes Release 4 offers Notes capability and Web access in a single tool, the folks at Lilly aren't likely to roll out Notes company-wide anytime soon. "We're able to put a browser on people's desktops for a lot less than the cost of a Notes client," says Swartzendruber. Even Lotus's new \$55 Lotus Notes Mail client can't beat

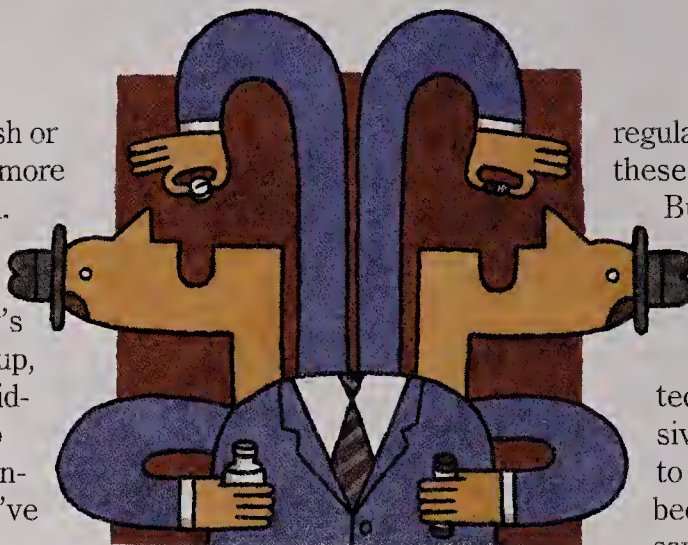
Lilly's price of \$10 to \$15 per desktop for Netscape Communication Corp.'s browsers. "For us, [Notes' new browser] is interesting, but we wouldn't be putting in Notes over Netscape just for that reason," Swartzendruber estimates that to launch its internal Web site, Lilly spent around \$350,000—about \$22 per person—for hardware, software and Internet access; it

now annually spends about \$125,000—roughly \$8 per person—on software maintenance and Internet access. By contrast, the company spends

regular help desk handles these things for the Web.)

But Swartzendruber advocates a deliberate approach to Web usage. "When you see things that are really technologically impressive, there's a temptation to say, 'I've got to have it because it's neat,'" he says. "But you have to plot a strategy, why you're putting in the Web and what you want to get out of it. Look before you leap."

—Alice Dragoon



roughly \$900 per person to launch Notes and \$400 per person each year thereafter. (Notes costs include training and help desk support; Lilly's

RECOMMENDED READING

Few teams have the good fortune of being inspired by the corporate equivalent of Vince Lombardi. Yet the best way to build team skills is to serve on a team that's been well-coached in the ways of collaboration, says Dennis Meadows, professor of systems policy and director of the Institute for Policy and Social Science Research at the University of New Hampshire in Durham.

At The Browne Center, a team training facility administered by the institute, the goal is to minimize the risks of learning by doing. Teams in training devote one, two or three days to problem-solving in an environment in which it's OK to fail—and thereby easier to learn. But for teams that need to hit the ground running without any trial runs, Meadows recommends the following books:

The Wisdom of Teams: Creating the High-Performance Organization, by Jon R. Katzenbach and Douglas K. Smith, Boston, Harvard Business School Press, 1993.

Inside Teams: How 20 World-Class Organizations Are Winning Through Teamwork, by Richard S. Wellins et al., San Francisco, Jossey-Bass Inc. Publishers, 1994.

25 Activities for Teams, by Arlette Ballew (Ed.), San Diego, Pfeiffer & Co., 1993.

Exploring Teamwork, a textbook used in a course offered by The Center for Management and Organization Effectiveness, Bartlesville, Okla., 1993.

The Team Building Tool Kit: Tips, Tactics and Rules for Effective Workplace Teams, by Deborah Harrington-Mackin, New York, American Management Association, 1994. ■

Competition [between Lotus Notes and Web-based technologies] will bring price relief, more features more quickly, and more openness in the long run. It's not an either/or proposition. Both have their place."

—David Marley, senior project executive, IBM Corp.



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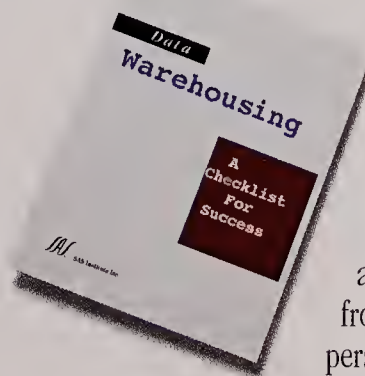
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TRENDLINES

SO SMALL*, SO YELLOW**, SO DEAR TO OUR HEARTS.

With competition brewing among groupware vendors, the 15th anniversary of one of the most basic tools of collaboration might have passed unheralded were it not for the stick-to-itiveness of 3M's PR department. To celebrate the ubiquity of the Post-it® Note, it orchestrated a four-press-release publicity extravaganza that included these important facts and figures:

- A Post-it® Note once traveled 3,000 miles on the back of a rental trailer when a family moved from California to Kentucky.
- A woman successfully bribed a Siberian official with Post-it®

Notes to get permission to take her newly adopted daughter out of Russia.

- In what might be an attempt to corner the consumer segment made of pregnant women and teenagers, Post-it® Notes are now available with Microfragrance™, which encapsulates such scents as bubble gum, dill pickles, pizza and chocolate. For professional worriers, there's also eau de natural gas. (Really.)

■ Demand for Post-it® Notes makes it one of the five top-selling office products in the United States—and there are more than 250 different Post-it® products.

- Post-it® Notes are available in 27 sizes and 56 shapes... including those die-cut in such shapes as trucks, cats, computers and feet (which are, of course, particularly well-suited for footnotes).

Those who wish to contemplate further their companies' dependence on sticky notes are in luck. As part of the birthday bash, the company is dispensing free Post-it® samples to those who fill out a questionnaire on 3M's

Candy Jar Web site (<http://www.mmm.com/market/omc/forms/omcndjar.html>). ■

*But wait! We have been informed by 3M's tireless PR staff that the Post-it® Easel Pad measures 25 inches by 30.5 inches. (The smallest Post-it® Note pad is .5 inches by 2 inches.)

**But wait again! The 3M PR folks tell us that Post-it® Notes now come in 18 colors.

KEEPING THE SKIES CIVIL

The skies become something less than friendly when a certain pilot hears his flight attendant ex-wife giving the seatbelt-and-oxygen-mask spiel as he's taxiing for take-off. Keeping the hostile pair apart could be difficult, given the complex process whereby pilots and flight attendants bid for monthly flight schedules, which are then filled according to seniority. But a rule embedded into the airline's Lotus Notes scheduling application ensures that the two never have to share the same piece of sky.

DEFINING MOMENTS

We must confess to being a little perplexed. After all, technology's assorted pundits agree that groupware is a hot topic; as for the Web, well, that's off the scale. So one would think that by posting a request for thoughts on groupware on our Web site (with the temptation of a prize, no less!) we'd get a double whammy of responses. One would think.

Over the course of two weeks, five lonely responses trickled into our mailbox, and only three of them were real definitions. What gives here? It's not our Web site (<http://www.cio.com>); we get about 108,000 hits a week. It's not the subject matter; groupware remains one of the most-discussed subjects at any gathering of high-level technology executives. We're left to conclude that

perhaps, like the working group sponsored by the Chicago chapter of the Society for Information Management and Coopers & Lybrand LLP, people have a hard time agreeing on what groupware is.

The 23-member working group devoted time at three monthly meetings—and a good deal of online time in a Lotus Notes discussion

database in between—to come up with a definition that everybody endorsed (see box).

Although that group put a lot of effort into crafting its definition, our Web contributors had only to cudgel their own brains. Here's what they came up with:

"Groupware is a sound tool for sharing, col-

laborating and exchanging information. The fundamental problem is that people tend not to like doing [these things]. Thus groupware tools merely become tools for attaching files. Work-

group•ware *n* 1. a collection of hardware, software and networks that uniquely enables organizations to communicate, to collaborate and to coordinate business processes. It allows businesses to create an inter- and intraorganizational memory and to share knowledge and expertise across time and geography from both structured and unstructured information sources. —SIM working group on groupware

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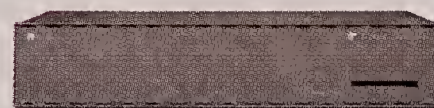
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TRENDLINES

group synergy comes when people feel trustful of their environment and collaboration is rewarded over individual performance."

—**Lafayette Howell**, *IT Process Improvement Manager, Blue Cross of Washington and Alaska, Seattle, Wash.*

"My definition is 'Artificial Teamwork.'"

—**Patrick Milligan**, *software engineer, Albuquerque, N.M.*

"Groupware is man's latest attempt to harness the power of collective thought. After all, it is his collective intelligence that gives man power over his environment."

—**Clifford Cox**, *deputy superintendent for Info Services, Detroit Public Schools* ■

"In some ways the Web metaphor, in terms of a network of nodes and linking between them, could be viewed as a metaphor for new organizational forms that we're seeing emerging that are more distributed. And the Web approach mirrors nicely the way organizations are structuring themselves: as nodes that are connecting and constantly forming and reforming into different teams or project groups."

—**Robert Halperin**, *executive director, Massachusetts Institute of Technology's Center for Coordination Science*

OFF THE SHELF

NO MORE TEAMS!

MASTERING THE DYNAMICS OF CREATIVE COLLABORATION

By Michael Schrage
Currency/Doubleday
(New York), 1995; \$14.95,
paperback, 239 pages

No matter what the form—inspired scribbling on a napkin, equations scrawled on a blackboard or an animated conversation—collaboration is often at the root of good ideas and successful projects. What's more, collaboration is increasingly essential in today's business climate as individual and organizational knowledge bases grow narrower and more specialized. Yet most organizations undervalue collaboration or confuse it with buzzwords like teamwork and communication, according to Michael Schrage, author of *No More Teams!* New collaborative technologies being developed will radically transform the way organizations and individuals work and interact, predicts Schrage, a research associate at Massachusetts Institute of Technology's Sloan School of Management and the MIT Media Lab.

Using colorful examples and straightforward language, Schrage explains how organizations are unwittingly sabotaging their best creative potential by discouraging unrestrained collaboration. For example, the typical office layout separates workers into cubicles where they toil alone on PCs with few opportunities for spontaneous, interaction.

Schrage also contends that the much-vaunted "information revolution" has little to do with creating better working relationships. The difference between communication and collaboration, he says, is the difference between talking and conversing, or between merely exchanging information and being understood. Team meetings are "a primitive, almost tribal, power game based upon a perfectly reasonable misunderstanding of what communication means," Schrage writes. "The meeting is a carousel of egos, each grasping for the brass ring of attention. The group does nothing."

When unrestrained collaboration does occur, it is often hindered by the limitations of the medium. (Napkins get ripped, people have illegible handwriting, whiteboards run out of room.) Schrage observes that although better collaborative technologies won't necessarily lead to more effective collaboration, they should augment the quality of interactions. Xerox Corp.'s Palo Alto Research Center's Colab, for instance, transformed meetings from a political stage to a shared space in which people could feed off of one another's ideas. Each participant had a

PC linked to a large whiteboard screen in the front of the room. Users could play with ideas on their own screens, send them to other computers or display them on the large screen for manipulation by others. Constraints such as lack of permanence, limited space and static representation of symbols were eliminated.

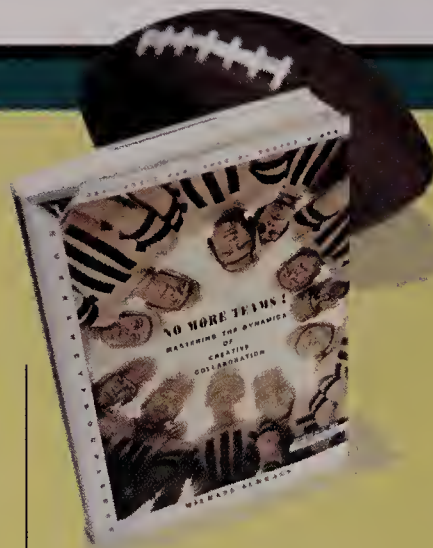
Schrage predicts that collaborative tools imbued with artificial intelligence and expert systems will likely prod people to more carefully explore assumptions or to pursue other lines of inquiry.

As more suitable technologies become available, Schrage says, collaboration will take on new forms with unforeseen applications. Just as the clock imposed a new concept of time and the telephone breached the barriers of distance, collaborative technologies will alter how people share thoughts and how organizations do business. For example, they will encourage companies to begin designing products *with* their customers and suppliers instead of *for* them.

It may be a stretch to assert that effective collaboration is the sole key to organizational productivity, and there's a danger that formalizing collaboration could stifle independent thought. But Schrage's emphasis on relationships offers an action plan for fostering an environment in which collaboration can thrive.

—*Jennifer Bresnahan*

Editor's note: This book, first published as *Shared Minds* (Random House, 1990), includes a new introduction and users' guide.



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Think Tank

BY TOM DAVENPORT

Software as Socialware

ONE OF THE THINGS I like about teaching is that students often help you realize how dumb you have been. I was guest lecturing in a class on information management, going on and on about how information must be managed in terms of human change. One student took me up on this proposition. "OK," she said. "What do you do to get a job where you manage the human aspects of information? What is the name of that kind of role?"

Three points occurred to me in rapid succession: One, there are no such jobs today; two, we won't really manage information technology successfully until there are; and three, I have been greatly remiss in not advocating for such jobs earlier and more vociferously.

We think of software as involving logic and code and screens and so on. But if the software is to be successful, it must also include social and behavioral change. Just as there are information inputs and outputs, there are human inputs and outputs. People have to supply or use information differently, or use different information. Their work process has

to zig where it used to zag. They have to furnish attention, interpretation and action in new ways. These changes happen whether we're talking about Lotus Notes, the Web, a spreadsheet or a lowly word processing system.

How do we manage this change? Let's face it: We don't. There might be a bit of training, a few interviews, at best a checklist of organizational change issues. But it's not taken seriously. It's nobody's job to deal with these issues, and for decades now we have allowed project managers and systems analysts to say, "It's not my fault; the system did what it was supposed to." As a result, most systems don't succeed in delivering the intended business value. In the early '80s, I was involved in a study suggesting that 80 percent of systems don't succeed, most for nontechnical reasons. Now a recent study suggests that more than 90 percent of business-critical systems projects fail.

I suspect that the success rate for groupware projects is even lower. That is, if we could define groupware. Take Notes, for example. In talking informally with tens of organizations, I have yet to find one that

believes that Notes transformed how groups worked. It's a pretty good information distribution system and not too shabby, albeit slow, for e-mail. But show me a company where Notes has transformed how work is done and decisions are made, and I'll water-ski to Nantucket in January.

What would we do if we were to get serious about changing the information behaviors of individuals and groups? Like most things in life, this won't get done until somebody is supposed to do it. There has to be an assigned responsibility for making change happen or at least for making it more likely. Also like most things, this idea isn't brand new; it goes back to the "sociotechnical" approach in the '50s.

One alternative is that organizational change could be added to the responsibilities of systems developers. There are a couple of firms that have tried to do this. BSG Alliance/IT Inc., a systems development and integration consulting company in Austin, Texas, says organizational change will be managed best if each developer has an awareness of change issues. Therefore, the company educates its



PHOTOS BY WYATT MCSPADDEN



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THE NETWORK IS THE COMPUTER[™]

employees on change issues and supplies them with methods and tools. Similarly, a few years ago at Hewlett-Packard, project managers and systems developers were educated on "Management of Organizational Change." I don't think either organization has measured the benefit of this education, though they're both glad they did it.

A few years ago at the U.S. Postal Service, organizational change management approaches and techniques were even incorporated into the systems development methodology. The traditional life-cycle method was supplemented with assessments of where change was made necessary by the new system, and the needed changes were to be managed with the same project-management tools used to monitor code development. But shortly after the new methods were completed, the Postal Service decided that it couldn't afford the time taken by a regular methodology, much less one that included organizational change. This trailblazing idea never really got a tryout.

BUT SYSTEMS DEVELOPMENT is a pretty tough business these days, even without forcing developers to be responsible for social and behavioral engineering. Can we really expect a programmer to learn organizational change readiness diagnosis at the same time we expect mastery of object orientation, client/server and Java?

No, I think we need specialists in this field. Call them, say, social systems analysts. Sure, they have to be able to communicate with technologists, but they have to be change-meisters first and foremost. On large systems, there are plenty of activities to keep an SSA busy full-time (see box); smaller systems can benefit from a fraction of a social analyst's time.

Another problem with making technologists responsible for change is that they will have to be equipped with and trained in change management methodologies. I suppose it is

useful to have assessment checklists and change indices and facilitation guidelines, but these methodologies make me nervous. I have seen reengineering projects managed according to change management methodologies in which all the boxes were checked off but no one ever had a frank, private discussion with senior managers about how much change they were willing to tolerate and pay for. We have to realize that much of change management takes place in hushed conversations behind closed doors.

For this reason and others, successful SSAs need a bit of gray hair. If mastery derives from experience rather than from methodology, then the fresh-out-of-school SSA won't be much help. To some degree, I even feel that successful change managers are born, not made. Knowing that change management is important does not make one a good change manager, a maxim to which my own lack of change management capabilities testifies powerfully. Learning about change management can be accelerated, but the primary means should be through work on projects rather than "book learnin'."

JUST AS HAVING THE BEST technologists in charge doesn't guarantee that technical systems will always work, having an SSA on the project doesn't ensure that change problems will be avoided or mastered. At Digital for example, the presence of several change-oriented practitioners on the XSEL project, an expert system for

the Digital sales force, didn't make the project a success. Still, the company institutionalized an SSA-like role on subsequent expert systems projects. It paired a change expert with a technology expert and a business analyst on all major projects. If expert systems technology hadn't declined, it would have been a good model for other organizations.

The widespread use of SSAs on systems projects could also be a way to institutionalize reengineering or at least process improvement. It's likely that the level of managerial enthusiasm for reengineering will decline at some point, but there still will be an undeniable need to use technology as an enabler of better business processes. The SSA can help guarantee that a system doesn't automate an existing hellish way of doing work.

In fact, the time to establish this new role is right now, when reengineering is still semirespectable. You can tell senior management that you are

making reengineering more permanent and less synonymous with cutting heads. If you need to do cost/benefit analysis for this new role, do a quick calculation of the number of systems in your organization that haven't worked or been used effectively. Preventing one large system failure will pay for a change specialist for many years. **CIO**

Thomas H. Davenport is a professor and director of the Information Management Program at the University of Texas at Austin. He welcomes reader comments at Tdav@notes.bus.utexas.edu.

Tasks for the Social Systems Analyst

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- Participate in system design to fit the system to organizational structure, culture and behavior.
- Facilitate user participation in the design activity in order to improve the system and acquire user buy-in.
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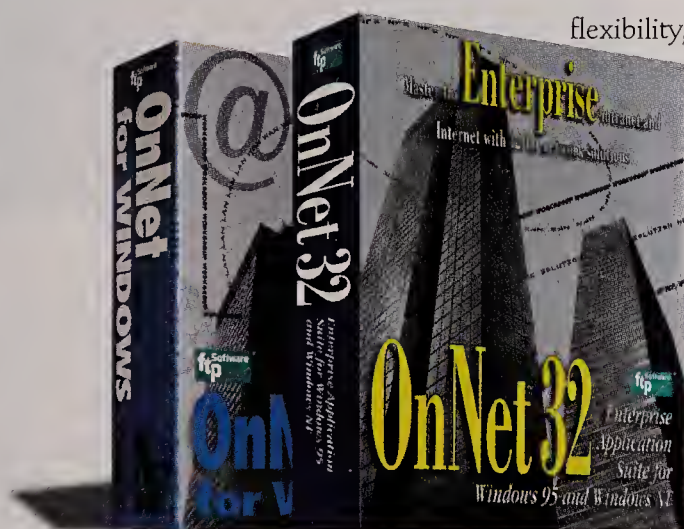
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INTRODUCTION

ALL TOGETHER NOW

Collaborative computing doesn't come in a box with a Lotus label. It exists in cyberspace, in the corporate infrastructure, in any of a thousand groupware utilities and, essentially, in the company's culture. This special issue identifies the pathways and pitfalls that mark the route to corporate collaboration.



WHEN IT COMES TO today's hot technologies, groupware perhaps suffers most from an image problem. It brings to mind a scene from *Gone with the Wind* in which Mammy chides Scarlett for pretending to be something she's not: "You're nothing but a mule tricked out in a horse's harness," she tells her.

Unlike Miz Scarlett, the technologies that fall under the groupware rubric don't masquerade purposely; rather, the fault lies partly in the eye of each beholder. Every business executive tends to view new tech-



PHOTO BY LOGAN SEALE

nologies through the unique lens of his or her company's specific needs, but this still doesn't explain the lack of consensus regarding the precise nature of this beast. Nobody has coined a handy sound bite to define groupware. It's touted as an essential tool that enables organizationally flat companies to work cross-functionally and gain the resulting productivity benefits. But what is it, really?

Examining Notes, the de facto groupware standard from IBM subsidiary Lotus Development Corp., doesn't help either. It's e-mail, it's discussion databases, it's an application development environment, it's a

place where different folks can work on the same document at the same time. In fact, even Lotus has had a tough time defining groupware. The Cambridge, Mass.-based company has commissioned more than one market research study to determine if it could position Notes as something other than the G-word. (It couldn't.)

In true editorial style, we've come to the conclusion that the problem is semantics: Many business executives mistakenly presume that groupware is a synonym for collaboration, when in fact the former should serve the latter. Groupware is the tool, not the carpenter, and the information systems function can leverage that tool for organizational change.

Successful collaboration swings on those familiar but vexing behavioral disciplines of teamwork, sharing and participation incentives. But it also requires technical know-how and a visionary's eye for change. After all, who would have thought a year ago that the Web would figure so prominently in the groupware debate? While the pundits jaw about the Web versus Notes, many companies find that the choice isn't an either/or proposition. Instead, they are integrating the collaboration and replication abilities of Notes with the easy-to-use and inexpensive broadcast functions of internal Web sites.

But CIOs have more than just Notes and the Web to choose from when implementing a groupware strategy. As the market matures, other companies are launching their own groupware offerings. Moreover, the number of tools that enhance the basic Notes package has skyrocketed. Beyond product choices, organizations that have fought through the challenge of an initial Notes implementation must now take the application to the next level. Groupware thrives under constant growth, and IS groups face infrastructural and budgetary hurdles to keep the project vibrant.

Whether a company is starting implementation or expanding an existing project, the executive staff and the IS department must agree on the intended business outcome, be it a simple calendaring system or a mission-critical knowledge-gathering program. Otherwise, they may run afoul of that old perception/reality gap. Although there's nothing wrong with a good, sturdy mule, it's quite another matter if you need a horse instead.

—Carol Hildebrand, Senior Writer

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*Source: IDC, November 1995.

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*Source: CIO Web/Internet Survey, December 1995.

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OVERVIEW

GETTING A GRIP ON GROUPWARE

In this era of cross-functional collaboration and global teams, tools that enable groups to nullify the boundaries of time and geography are fast becoming a hot commodity

By Mickey Williamson

WHEN HEIGHLY SPORTS, an equipment marketing company, acquired Hypothetical Design Inc. of Singapore, the Heighly Hypothetical Sporting Goods Co. was born. The new enterprise presented a major challenge to the CIO: Marketers at U.S.-based Heighly wanted to be part of Hypothetical's design team, believing they had a better understanding of trends in the company's primary markets, but the chief financial officer took a dim view of their plans for monthly design meetings in Singapore. So the marketers asked for technology to enable the two groups to collaborate without breaking the travel budget. The CIO knew his stuff and turned to groupware to solve the problem.

Now that groupware is coming into its own as a means to enable people to work in groups, regardless of where they are located,

the solution in this fictional example is anything but hypothetical for more and more companies. According to International Data Corp. of Framingham, Mass., the installed base of collaborative application software users reached 35.3 million in 1994, an 88 percent increase from the previous year. Workgroup applications, which had their early deployment at the departmental level, will increasingly be implemented on an enterprisewide basis, says Linda Myers-Tierney, director of electronic workplace technologies at IDC (which is owned by the same parent company as *CIO*).

The growing popularity and expanding functionality of groupware are "driven by business imperatives that cause organizations to be much less rigid," according to Eric Brown, senior analyst at Forrester Research Inc., a consultancy in Cambridge, Mass. "The creation of a more web-like management structure spreads decision-



making responsibility across the organization, so you're not necessarily sitting near the people who have the authority and expertise to make decisions," he says.

Groupware can help people and companies transcend all sorts of boundaries. Geography, time and organizational structure fade in importance in the groupware-enabled corporation. But figuring out which products will provide the flexibility to meet a company's individual information-sharing and collaboration needs is a tough nut for CIOs to crack.

Groupware, like all burgeoning technologies, comes with a confusing vocabulary and is itself hard to characterize. In fact, a Society for Information Management working

group established to assess groupware took three meetings—and considerable online discussion in Lotus Development Corp.'s Notes in between—just to define terms. (See "Defining Moments" in *Trendlines*, Page 20.) Forrester Research defines groupware as "technology that communicates and organizes unpredictable information, allowing dynamic groups to interact across time and space." Ronni Marshak, editor in chief of *Workgroup Computing Report*, a newsletter published by the Patricia Seybold Group in Boston, points to the importance of distinguishing between groupware and workgroup computing. "Groupware is software to support collaboration. Workgroup computing

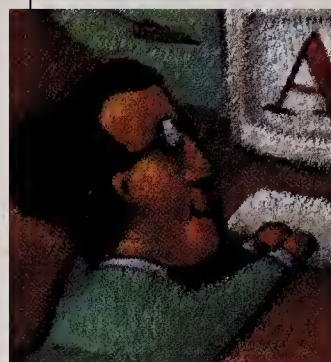
"Communication, coordination and collaboration are the hallmarks of groupware."

—Ronni Marshak

Sorting Out Collaborative Team Application Features

FUNCTION	APPLICATION RIGIDITY	
	Unstructured	Structured
Communicate & Organize ▶	■ Executable mail messages ■ Shared folders ■ Threaded discussions	■ Online transaction processing ■ Product data management ■ Document management
Communicate ▶	■ Real-time conferencing ■ Web pages ■ Bulletin boards ■ E-mail	■ Document workflow ■ Forms routing ■ Calendaring/scheduling

SOURCE: FORRESTER RESEARCH INC.



"Groupware is technology that communicates and organizes unpredictable information, allowing dynamic groups to interact across time and space."

—Forrester Research

has to support workers both as members of the workgroup and in their individual activities," she says. Examples of workgroup technologies include word processing and spreadsheet applications.

Communication, coordination and collaboration are the hallmarks of groupware, says Marshak. Groupware enhances people's ability to communicate about work in progress in real-time or as work schedules permit. It enables groups to coordinate their work, often without involving a management hierarchy. And it makes possible the collaboration of multidisciplinary teams on projects such as product design and the production of reports and presentations regardless of people's locations.

A literature search on the keyword "groupware" yields a list of some 300 products and 200 vendors—typical numbers for a hot technology. Consolidation through mergers and acquisitions is inevitable, observers agree, but confusion reigns in the interim. One way to understand groupware better, says Jeffrey Held, a partner with Ernst & Young LLP in Fairfax, Va., is to sort products according to whether they support synchronous or asynchronous activity.

Synchronous products operate in real-time. "Their approach is to make meetings more effective," Held says. In this category he includes voice conferencing, videoconferencing, document sharing, scheduling and meeting management products. By contrast, "asynchronous products are intended to make meetings disappear," he says. Asynchronous products are time-independent and well suited to the needs of participants working on different shifts or in different time zones. Such products often use an underlying electronic mail system. "You can debate whether e-mail is groupware," says Held. "If you tried group collaboration with e-mail [alone], you'd very quickly find out it doesn't work, but e-mail or messaging is usually part of any other groupware solution."

The first product most people think of when talk turns to groupware is Notes, which was used by 60 percent of 50 companies in a June 1995 Forrester Research survey of groupware users. Notes facilitates asynchronous discussion and collaboration, organizing working documents in a shared database. For all its popularity, Notes is expensive and demanding of resources. It is also complex to administer—a fact that, according to David Yockelson, vice president of the Meta Group Inc. in Stamford, Conn., often leads to "application anarchy," a situation in which user groups create their own separate and often redundant applications.

"There are options for companies wishing to spend less money and avoid this anarchy," Yockelson says. "For example, if a company wants only a discussion database, they might buy Collabra Share or a similar product." (Mountain View, Calif.-based Netscape Communications Inc., which purchased Collabra Software Inc. in September 1995, plans to continue to support Collabra Share 2.0 as a stand-alone product even as it integrates its features into Netscape's Web browser and server products. See related story, Page 42.) Other products in this category include TeamTalk from Trax Softworks Inc. of Culver City, Calif., OpenMind from Attachmate Corp. in Bellevue, Wash., and two forthcoming entries: Microsoft Corp.'s Exchange and Novell Inc.'s GroupWise XTD.

Held says most of his clients are spending their time and money on the asynchronous approach because "the issue is not making meetings better; it's being able to work without having so many meetings." But for those who want meetings without the necessity of travel, a wealth of offerings is available.

Anyone who has ever had to find a date and time when everyone in a project group is free to meet can readily see the value in calendaring and group scheduling software such as Meeting Maker XP from On Technology Corp. in Cambridge, Mass. Such products depend on users to keep their calendars up-to-date and accessible to the software, which, when a meeting is to be scheduled, collects information from each member's schedule and finds a time when everyone is available. Scheduling products can also issue meeting notices, distribute agendas and record each person's confirmation of ability to attend. In addition, they can be used to reserve and track the availability of meeting rooms, audiovisual equipment and other assets required for successful face-to-face meetings.

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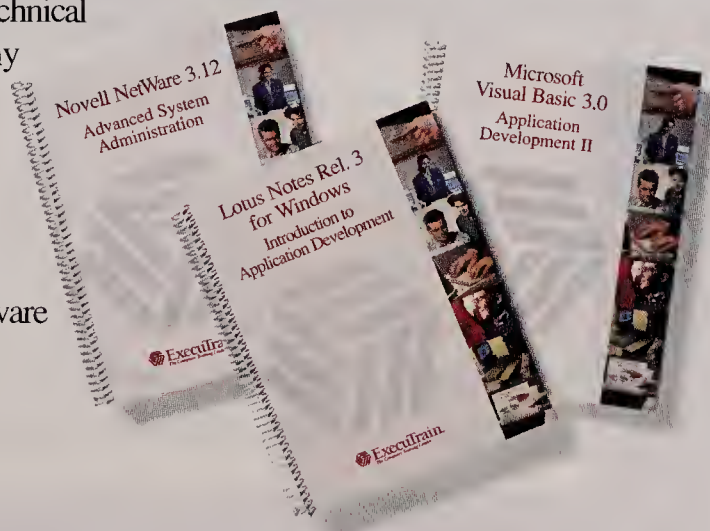
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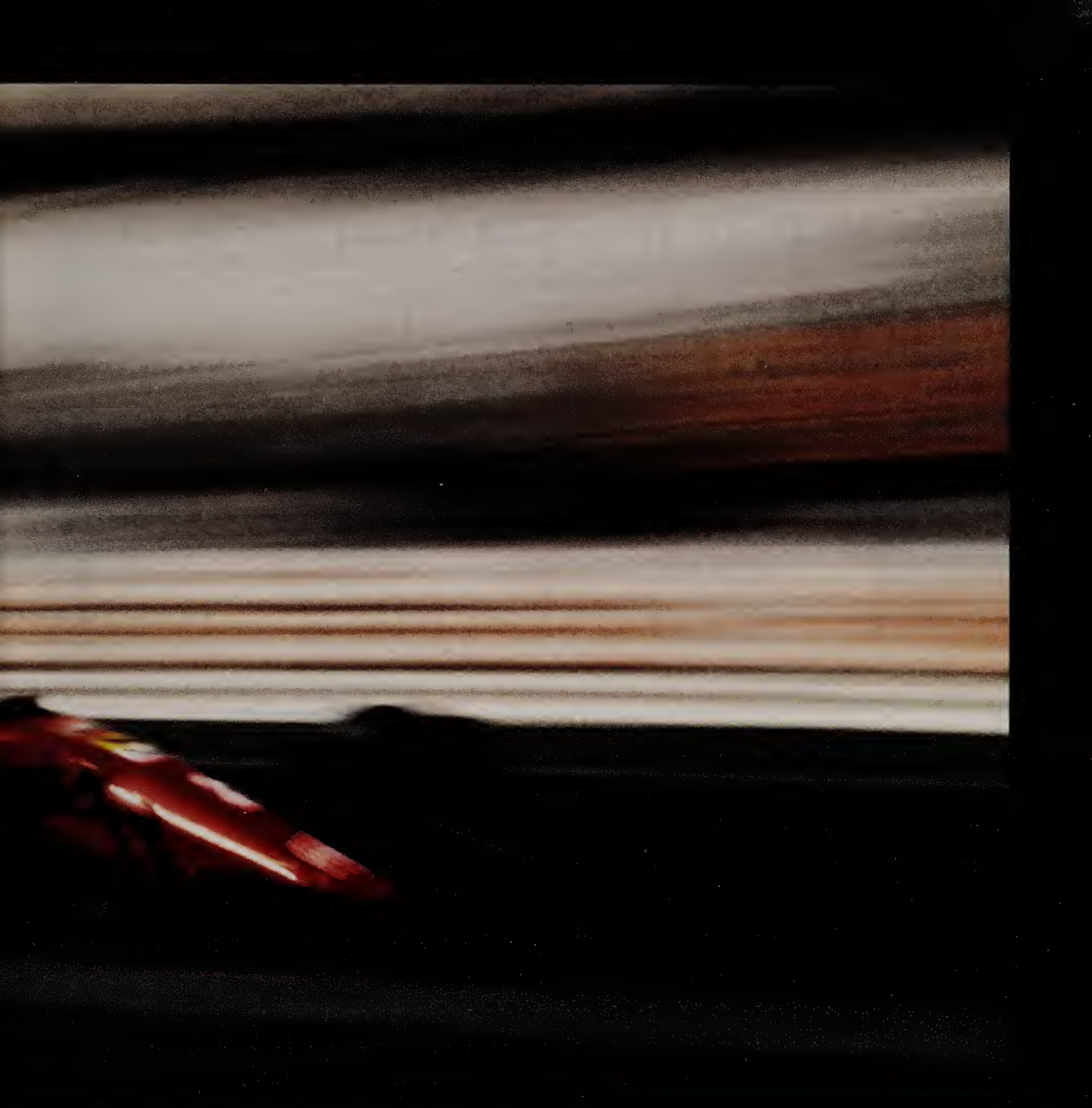
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"Most meetings are run poorly, take far too long and accomplish far too little because most people just don't know how to run a meeting. If you run a meeting properly, then you don't need meeting management software."

—Jeffrey Held

Meeting management software, such as GroupSystems from Ventana Corp. in Tucson, Ariz., creates a record of ideas presented, comments made, votes taken and action items agreed upon at meetings. That type of product can also allow people to meet while sitting at their own desks, whether they're at a single site or in multiple locations, thus eliminating travel expense and wasted time. When meetings are conducted that way, the software allows people to "contribute ideas, view other people's ideas anonymously, comment and vote on them," says Held. "The attraction is that everybody can see everything, but it can all be done in an anonymous way, so that people don't have the usual concern about contradicting the boss."

The lure of meeting management software, Held adds, is that it makes up for the fact that "most meetings are run poorly, take far too long and accomplish far too little because most people just don't know how to run a meeting. If you run a meeting properly, then you don't need meeting management software," he says.

Since so much group work involves collaborating on written material, a number of products have come to market that enable two or more people to discuss and annotate the same document simultaneously, even though the workers are miles or even continents apart. Often used in conjunction with the telephone, which, according to Brown, should be considered a valid component of a groupware system, shared-document systems come in two flavors.

The older of the two is known as a shared whiteboard. Generally limited to two people at a time, a whiteboard system, such as Talk-Show from Future Labs Inc. in Los Altos, Calif., allows each person to see an image of the document in a manner similar to that in which one views computer-based facsimile messages. Each user annotates a copy of the image and transmits the annotations to the other user in real-time—or close to it, depending on the speed of the connection. The limitation of this technology is that changes and corrections eventually must be keyed into the document itself, thus creating extra work for someone in the workgroup, according to Lenny Pitts, an analyst with Technology Business Research Inc. of Hampton, N.H.

Newer systems, Pitts notes, such as Hillsboro, Ore.-based Intel Corp.'s ProShare line and InSoft Share from InSoft Inc. of Mechanicsburg, Pa., are replacing the whiteboard approach with one that allows two or more par-

ticipants to work on copies of the same document using a single software application. Revisions and comments appear on all users' screens at the same time. Changes are automatically saved, and redundant typing is eliminated.

Underlying the collaborative revision system is often a shared repository that provides version-control functionality, allowing preservation of the history of annotations and changes. Document management systems such as the Documentum EDMS line from Documentum Inc. of Pleasanton, Calif., and Saros Document Manager from Saros Corp. of Bellevue, Wash., provide index and search-engine capabilities to prevent companies from being overwhelmed by the proliferation of messages that groupware engenders.

Rounding out the groupware portfolio is videoconferencing from companies such as PictureTel Corp. of Danvers, Mass., again available in two styles. Group video can link meeting rooms in multiple locations and participants can see who is in each room, who is talking and who has entered or left the meeting, providing, in effect, a virtual meeting space. The more elaborate desktop video systems require a camera trained on each participant and broad bandwidth to carry the video images. "Forrester's take on videoconferencing is that it would take so much effort to lift the entire infrastructure to get the required bandwidth for full-band video that few companies see the benefit," Brown says. "People can have a very meaningful conversation without being able to see each other." Where visibility is required, Brown favors low-bandwidth videoconferencing. "Rather than seeing my face in real time, it is sufficient to see a picture of my face and know, in turn, at whom I'm looking. You don't need a camera pointed at my head to capture all the nuances of my expression," he says. Pitts adds, "The real question is what kind of video quality you get. Some of the products are kind of choppy."

Infrastructure concerns are keeping companies—with the exception of those in highly specialized industries such as telemedicine—from investing in desktop video systems. But for most groupware components, existing facilities should prove sufficient, says Held. "The infrastructure needed for groupware is not much different from what you need for anything else. If it will run client/server systems, it will run groupware." A dedicated groupware server may be a good idea, he adds, because group-

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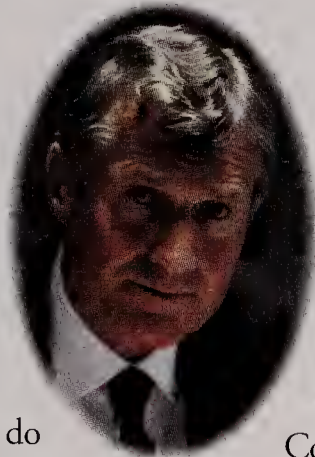
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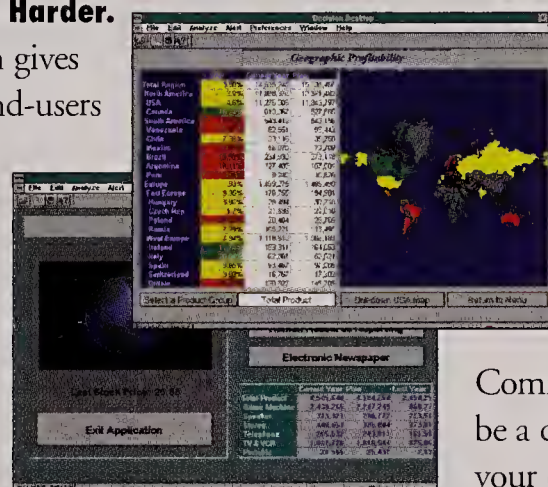
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Where Does Workflow Fit In?

EXPERTS DISAGREE ON WHETHER WORKFLOW systems belong in a discussion of groupware. Generally, workflow is a transaction-based technology in which electronic documents move from workstation to workstation, driven by business rules encoded in a workflow engine. By contrast, groupware technology sets up ad hoc structures driven by contributors and content, says Forrester Research Inc.'s Eric Brown. Thus while workflow systems are inflexible about the form and movement of documents through the organization, "groupware is free-form. It can go anywhere it needs to go," he says. "When you start to implement process-based applications to coordinate the activities of a group, that's a workflow application, not groupware."

David Yockelson of the Meta Group Inc. agrees—in part. "If there is an intent to codify a corporation's or department's business rules and then enable those rules to be used by applications, that [suggests] a workflow requirement," he says. But Yockelson says he sees the possibility of a merger of the technologies using the rules engine on which workflow products are based. "There is a set of workflow engine vendors—FileNet and Action Technologies are two examples—that I think are going to take the market forward because they are flexible enough to be built upon for application and package software development, document management and groupware," he says.

At present, however, most observers agree that the danger of confusing groupware and workflow technologies is that IT shops will try to provide users with the capabilities of one using tools that employ the other, a recipe for disappointment. —M. Williamson

"The goal of synchronous products is to make meetings more effective. Asynchronous products are intended to make meetings disappear."

—Jeffrey Held

ware requires a high degree of interactivity. "If you get a large group of people going against any server in an application that's very interactive, it's not going to be able to do anything else," Held says. Pitts defines a powerful server as "a Pentium-based system with 64 or 128MB of RAM and a couple of gigabytes of storage."

Except where e-mail is concerned, standards don't present much of a problem, experts say. "In general, an enterprise of any size will get better performance with IP as its network protocol," Held advises. Brown likes Network News Transfer Protocol (NNTP) for threaded-discussion databases and Simple Mail Transfer Protocol (SMTP), which he thinks will win out over X.400, for intersystem document exchange.

Two conflicting e-mail programming interfaces, Microsoft's Mail Application Programming Interface (MAPI) and Lotus's Vendor Independent Messaging (VIM), force a

choice of e-mail systems today. Notes Release 4's support of MAPI will solve the problem for Release 4 users, but it won't help the installed base of non-Microsoft mail products. "As with everything else, we have the traditional API wars and, as usual, the combatants are Microsoft and Lotus," says Held. Increasingly, he notes, groupware products are being constructed to plug into a mail engine based on one or the other. "Microsoft appears to be prevailing for no reason other than the fact that they're Microsoft," he says. "The API issue is starting to be resolved because there are enough dominant players driving the standardization," says Held.

In addition to thinking through infrastructure and standards issues, CIOs must be prepared to support mobile users because, as Held points out, it isn't just office-based workers who need groupware connections. "You need remote dial-in, too," he says. "That's important. The people who really take advantage of groupware are the mobile users, so they need to have dial-in capability to the network."

Equipping individual workers with groupware is relatively inexpensive, especially in the context of time and travel expenses saved. Pitts, whose company specializes in market research on the hardware side of the groupware equation, estimates the cost of an average desktop client machine at about \$2,000. Applications range in cost from the low hundreds to the low thousands of dollars per seat. Marshak cautions CIOs to budget education and training costs for users at two to three times the cost of software.

As global pressures build, large corporations scale down and organizational structures flatten, the requirement for rapid communication among people collaborating on business tasks will only increase, observers agree. CIOs can expect to field requests for tools to enable work by both permanent and transitory workgroups. The best way to position the IT organization to meet these demands is to assemble a collection of groupware products to suit a variety of needs—from asynchronous threaded discussions to virtual meetings with or without the ability to share documents in real time. Once again, the twin imperatives of flexibility and responsiveness are testing the CIO's mettle. This time, the technology exists to meet the challenge. **CIO**

Mickey Williamson can be reached via e-mail at wmson@equinox.shaysnet.com.

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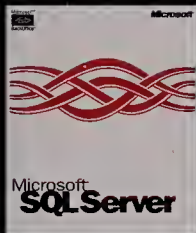
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NOTES VERSUS THE WEB

OPEN TO DEBATE

By Alice Dragoon

Though the differences between Notes and the Web are diminishing, each still has distinct advantages. Business needs should determine whether you choose one or the other—or both.

RAIN POURED DOWN ON KEVIN DAN-
ehy and his colleagues last Oct. 21 as they
watched his alma mater's football team
crumble, 49-7, at the hands of Army. Since
the day was already going so badly for the
manager of workgroup application develop-
ment at Millipore Corp., his one-time co-
worker and longtime friend Gregg Prescott figured it
would be an excellent time to needle him about Mil-
lipore's installed base of nearly 1,500 Lotus Notes
users. As the group's van pulled out of the Boston
College stadium parking lot, Prescott leaned for-
ward—in front of Danehy's boss—and said, "Geez,
Kevin, don't you think that Lotus Notes is finished
now that the World Wide Web is taking off?"

His argument would be bolstered a few weeks later
in a front-page article of *The Wall Street Journal*. Why
spend all that money on proprietary groupware with a
1980s search engine, *The Journal* asked, when you can
set up an inexpensive internal Web site and outfit
your workforce with Netscape's virtually free Web
browsers? With hundreds of Web startups developing
robust tools and security measures, won't the Web
blow Notes out of the water within a year or two?

Undaunted, Danehy defended Millipore's strategy.
Equipping the Bedford, Mass.-based water- and gas-
purification technology company's nomadic sales
force with Notes had already paid off handsomely,
providing access to sales presentations and R&D data



GREGG PRESCOTT
(left) and **KEVIN**
DANEHY square
off on the Notes/Web
debate.



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as well as a sophisticated Oracle/Notes contact-management system powered by Platinum Technology Inc.'s InfoPump. An internal Web site by itself wouldn't let Danehy put replicated databases in the hands of mobile salespeople, nor could it provide the security or workflow capability Millipore needed. In fact, the company was using Lotus Notes to manage its external Web site.

Still, Danehy conceded that Prescott, di-

A Web/Notes Decision Tool

When is the full-blown "Swiss Army knife" functionality of Notes warranted and when is it overkill? GM developed a matrix to figure that out.

GENERAL MOTORS CORP. HAS AN INSTALLED base of between 40,000 and 50,000 Notes clients, which serve as the front end for such substantial client/server applications as one that integrates design activities in Australia, Europe and the United States. For several years, the company has also relied on the Web as a tool for general information sharing, primarily in GM's engineering community. Based on this experience, Donald G. Hedeon, director of information delivery and deployment, and Bob Sellars of EDS, who manages GM's consistent environment program, drew up a list of 20 types of applications, then asked seven or eight questions about each: Does the application push or pull information? Is it short-lived or permanent? Will it serve the entire enterprise or a single workgroup? Is it internal or external? Is it process-oriented?

Taking into consideration the current state of technology, they then constructed a matrix for determining whether to use Lotus Notes or the Web. For example, a bulletin board may or may not require multiple levels of data access. Although in either case people would "pull" data when they need it, a multilevel access requirement would be better met using Notes, and a Web-based application would be better suited for an open-access bulletin board.

In general, says Sellars, the more complex the application, the more likely it is that Notes will be the appropriate solution. Although the Web is recommended for fewer applications on the GM matrix, Sellars says that for handling sheer volume of information, the Web wins. "Both are powerful tools, and you can make each tool do almost everything the other tool can do," he says. "It's just a question of what's better now, in terms of ease of use and cost of use. More important, you need to understand both, have some experience with both and let the marketplace sort out what's the most effective use of tools for various business functions."

—A. Dragoon

rector of MIS at Epsilon Data Management Inc. in Burlington, Mass., had a pretty compelling cost argument for an organization not already committed to Notes. Stacked against Netscape Communication Corp.'s browser, available for about \$20 with volume discounts, Lotus's desktop Notes application was hard to justify at \$160 a pop. With Web servers poised to acquire groupware functionality, he could see how a company without a large installed base of Notes might be tempted to distribute information on an internal Web site and bet on rapid advances in the open Web tools industry to support it. "Yeah, you're right, Gregg," Danehy heard himself say. "If Lotus doesn't do something with price, I don't see how they're going to last over the long haul."

Moving Targets

BUT EVEN AS DANEHY AND Prescott spoke, the terms of the Notes versus Web debate were shifting. Last fall, as Microsoft Corp. awoke to the potential of the World Wide Web, IBM Corp. and its subsidiary, Lotus Development Corp., recognized that Notes was doomed if they didn't do more to capitalize on the Web's power. In December, Lotus announced plans to offer an integrated Web browser in Lotus Notes Release 4, to slash the price of the desktop version of Notes from \$155 to \$69 and to provide a \$55 client/server e-mail client called Lotus Notes Mail that incorporates both Web browser and basic groupware functionality. Pushing its strength as a Web server management system (with InterNotes Web Publisher, which debuted in May 1995), Lotus was attempting to reposition Notes as the leader of the integrated groupware/Web market. By the end of January, *BusinessWeek* reported that the number of PCs using Notes had doubled over the previous six months to reach 4.5 million, and that number was expected to climb to 20 million—the break-even point for IBM's investment—in 1998. As Lotus was striving to make Notes seem more Web-like, Netscape, the darling of the Web industry, was busy snapping up Collabra Software Inc. so that it could incorporate Collabra Share's collaboration and messaging technology into Netscape Navigator and Netscape server products. Meanwhile, competition was heating up in the groupware arena as Microsoft prepared an extensive marketing effort to launch Exchange

and Novell Inc. readied its debut of Group-Wise XTD.

As the distinctions between Notes and Web products are beginning to blur, the either/or question is losing relevance. "Every major vendor that builds any type of client/server technology will wind up supporting HTTP and HTML in some form within two years, and [HTTP and HTML] will be an integral part of almost every product shortly thereafter," predicts Tom Austin, a research director at Gartner Group Inc. in Burlington, Mass.

With the desirability of embracing the Web a foregone conclusion, CIOs are left with two questions. First, do their companies need the advanced groupware capabilities that Notes provides today, or can they get by with the basic broadcast functionality afforded by a "naked" internal Web until Web tool vendors catch up? And second, does it make sense to use the proprietary but complete family of Notes products to manage their Web servers, or should they wait for open Web-based tools to mature and pick the best of breed?

A Question of Need

ISSUES OF SECURITY, EXPENSE AND open versus proprietary architectures all come into play. But like all IT strategy decisions, the fundamental question is one of business requirements. A full-blown application-development environment, Notes enables communication through e-mail, collaboration through shared databases and conferencing, and coordination through workflow. "Notes is this big, honking, full-function, scripting, replicating, database query, full-text search engine," says Eric Brown, a senior analyst specializing in software strategy at Forrester Research Inc. in Cambridge, Mass. "It's like the Swiss Army knife [when] all I need is a spoon.... I have to administer the knife, I have to understand it, I have to distribute it to people and make sure they don't cut themselves. But to turn a spoon into a knife is hard."

Whether companies really need all that functionality is open to debate. In fact, Forrester reported in June 1995 that only 23 percent of Notes users were taking advantage of Notes' high-end capabilities such as workflow and forms routing. "A large number of customers have resisted the high-order functions," says Bobby Cameron, a se-

nior analyst at Forrester's Software Strategy Service. Whatever the cause, for more than three-quarters of Notes users, Notes isn't doing anything they can't do with e-mail and the Web. And given that most organizations are more comfortable with relational databases, Cameron predicts that forthcoming Web-based offerings from vendors such as Oracle Corp. and Informix Software Inc./Illustra Information Technologies Inc. will give Notes a run for its money.

Although both Notes and internal Webs can be made to do what the other does best, Lotus will have an easier time adding Web functionality than Web companies will have catching up with groupware, according to Austin. "If we compare the effort it takes a Lotus or a Microsoft to add HTTP and HTML support to the level of effort it will take the Web browser companies to add the depth and breadth of functionality that, for example, Lotus has in Notes, the task of picking up Web support is trivial."

Lotus's biggest problem, according to Austin, is one of marketing. Lotus now owns the groupware market, but for most people, groupware is what Austin likes to call "gropeware"—hard to understand (please see "Getting a Grip on Groupware," Page 32). "Lotus has historically argued that value from their groupware is only accessible by dint of hard work building special applications," he explains. "Meanwhile, Netscape and others come along and say, 'Look, here it is. It's the Web. The world's information is at your fingertips; it's easy to understand, and it requires very little investment.'"

Notes' Richer Features

BUT THE VERY SIMPLICITY OF the Web makes it unsuitable—for the moment, at least—for business applications that go beyond general information sharing. A midsize software company

"The Web is ideally suited

to get information out easily and cheaply. You don't have to worry about what software is on the client as long as you have a Web browser. As you begin to get into more functionality—database access forums, discussion groups, workflow applications—the tools become a little less available. The decision becomes a lot harder."

—Michael Goulde

Patricia Seybold Group



JOHN SWARTZENDRUBER
likes Notes for collaboration and security, the Web for easy and open access to information.

in the process of becoming an Internet solutions provider started using Notes last fall, despite the clamorings of some users who think the company should devote itself to the Web, not a proprietary environment against which it may eventually compete. The CIO, however, sees Notes as a "fairly industrial-strength, business application-development tool" and thinks the Web isn't quite there yet. So although the company will use the Web internally for information dissemination, it'll stick with Notes for any internal applications requiring secure workflow for the next year. At that point, the CIO will reevaluate the robustness of Web-based security and workflow tools.

Pharmaceutical company Eli Lilly and Co. in Indianapolis will expand access to its

internal Web dramatically this year, but it will continue to use Notes for collaboration and for information that needs to be secure, according to John K. Swartzendruber, an information consultant in Lilly's Internet Services Group (see "A Double Dose" in Trendlines, Page 16).

For companies with a large installed base of Notes, however, Lotus's recent moves to add Web access and lower prices are welcome. At Millipore, Danehy postponed plans for a 1,000-seat corporate licensing agreement with Netscape until he had a chance to evaluate the Notes browser. Instead, he will buy Netscape browser software to run on about 10 strategically located Web-access kiosks that will serve up internal Web-based corporate information to Millipore's 1,200 manufacturing workers.

The Openness of the Web

BUT AT LEAST ONE COMPANY IS glad Lotus didn't lower its prices any sooner. At San Mateo, Calif.-based Electronic Arts, budget limitations drove Krmo Salem, director of network services and operations, to develop an internal Web site instead of buying Notes for the interactive entertainment software company. In mid-1994, when Notes was still priced at \$499 per desktop, Salem was looking for an easy way to get information to all 1,000 employees, who were scattered on Macintosh, PC and Unix platforms. He pleaded with

Lotus to drop the price to \$300, but, at that time, Notes' price was non-negotiable. "To be honest, if I could have bought it for \$100, I would never have looked at an internal Web," he says.

But Salem is glad he made the Web commitment because he sees more potential in the open environment of the Web. Although he bemoans the fact that Web-based custom business applications aren't available off-the-shelf like they are for Notes, he

says he was never comfortable with OS/2 and always had doubts about Notes' closed architecture. "Today, you can't compare products," he says. "But, in the future, I think we can do a lot more with Web-based

"The Web doesn't kill Notes;
the Web gives Notes a purpose. Finally, people demand documents, rich text, formatted tables—all the things Notes does. It's just that the clients won't be Notes clients.... But the Notes server makes a great Web server."

—Eric Brown
Forrester Research Inc.

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Form Row Field Help

41

Cust No: 1536 State: CA

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City: Berkeley

Escalation Status: None Low High

Open Row Open List

Order No	Order Date	Order Status	Opts Lock
125	12-dec-1994	Closed	12
145	01-Jan-1994	Pending	3
246	18-Jan-1994	Pending	1
298	27-Feb-1994	Pending	25

Frame Editor: OrderStatus

File Create Edit Group View Arrange Appearance Bias

Frame Help

100

Cust No: State:

Name: Zip:

Street: Contact:

City:

Escalation Status: None Low High

Open Row Open List

Order No	Order Date	Order Status	Opts Lock
0		Pending	
0		Pending	
0		Pending	
0		Pending	

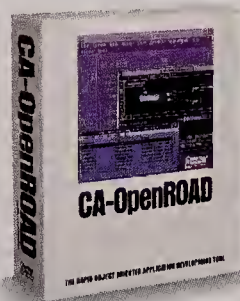
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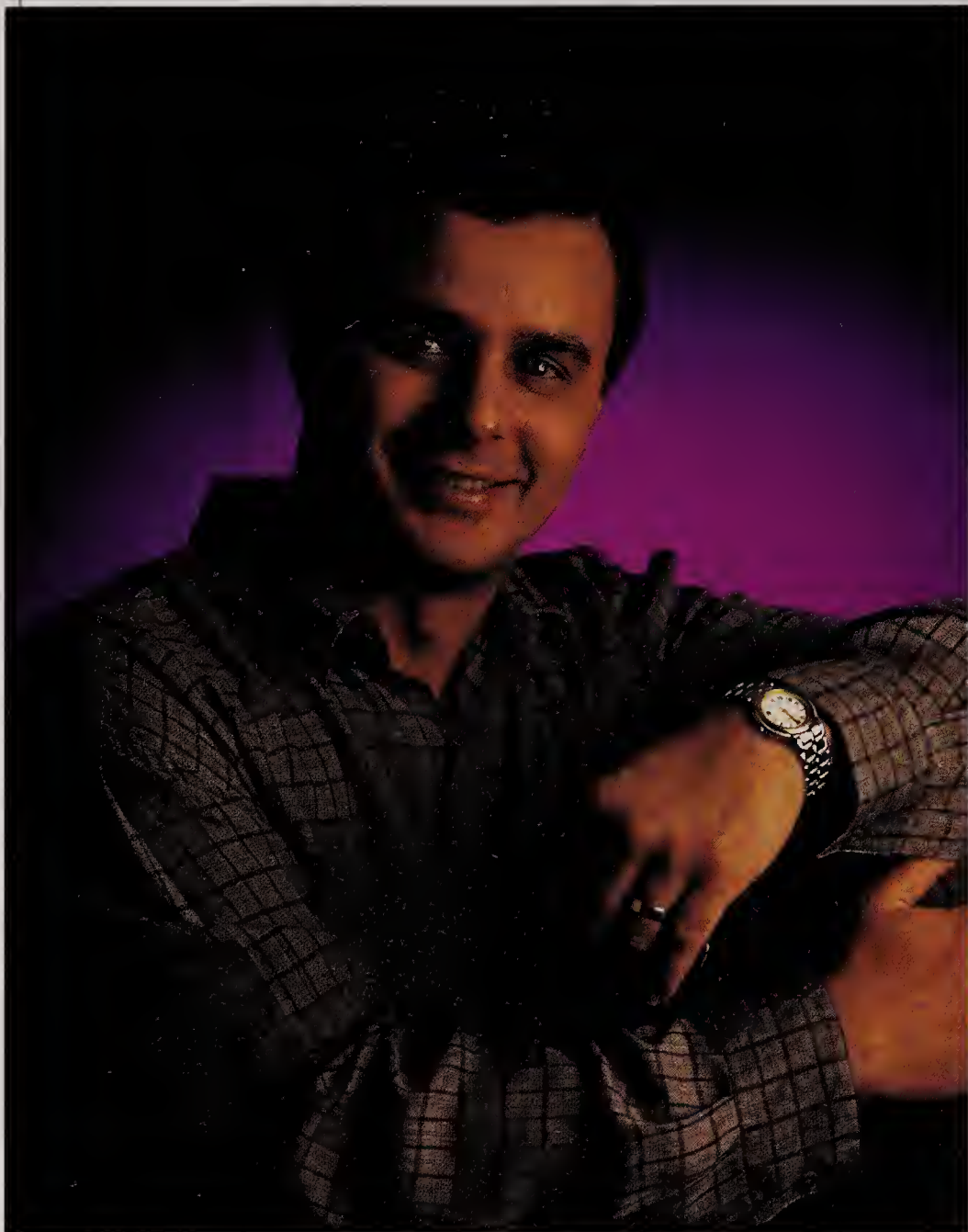
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Price drove **KRIMO SALEM** to choose the Web. He's happy it did.

applications than Lotus Notes. It's just that we're not there yet."

Because the Web is an open environment, the innovations and collective brainpower of hundreds of Web-development companies are contributed back to the Web, says Michael Goulde, a senior consultant specializing in electronic commerce infrastructure at the Patricia Seybold Group in Boston. Although Notes has third-party developers, their capabilities are limited by the underlying Notes infrastructure, which only Lotus can improve. As a result, while the Notes product cycle is 18 to 24 months, according to Goulde, the Web sees significant new functionality every six months. "The value that Notes brings has gone from

"Build an internal Web to solve a problem that groupware doesn't solve.... I believe you could have the two systems working together for as long as you want because they solve two different problems."

*—Krimo Salem
Electronic Arts*

being unique to being differentiable," he says. "However, that gap is narrowing very rapidly."

Goulde is worried, however, by what he sees as a pernicious trend toward less openness in the Web environment. He observes that more vendors are coming out with proprietary extensions to Web standards—for instance, Netscape Web servers that require a proprietary API to take full advantage of their capabilities. "[It's like] when every Unix system was different and developers had to do a lot of work to make an application run on different Unices," he says. "Now, developers must do a lot of work to make applications run on each server. If this gets out of hand, the momentum that the Web has enjoyed for the last two years could come to a screeching halt."

Security Tradeoffs

WHILE OPENNESS IS ONE OF THE Web's greatest strengths, its easy accessibility is considered a big weakness for IS executives concerned with security. As David Brown, director of emerging technologies at Stride Rite Corp. in Lexington, Mass., observes, the Web was never designed to be a secure set of pipes for commerce. "It was designed to foster collaboration and openness," he says. "Now that we're trying to put all this sensitive information on it, you've always got an issue with security."

Forrester's Brown observes that "it's as easy to connect to a Web site with a browser as you can imagine. But what you get is loose, rapid access to an information base without a lot of security." Although Web-based security tools are available today, IS executives must go out and find them to create the application that with Notes is turnkey, he says.

Ultimately, Web-based security could wind up being more expensive—if companies require the same level of security that Notes provides. But not everyone does. At Eli Lilly, for example, high security needs are met with Notes, and most of the internal Web is open. Only one of the company's 15 internal Web servers is restricted to users with pass-

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DAVID BROWN:
*The Web wasn't
designed to be secure
for commerce.*

words. Although adding more security to the internal Web isn't currently a top priority, Swartzendruber thinks security will be more difficult to manage if it becomes necessary to restrict access to multiple servers.

Part of what makes Web-based security harder to manage is that standards battles and infrastructure issues remain unresolved.

"Current Internet appears to be straightforward and simpler, therefore cheaper. But as companies start to use it in a very big way, they find a lot of so-called 'hidden' costs."

—Bob Sellars, EDS

"By the end of 1996, there will be security mechanisms in place comparable to Notes security mechanisms," says Forrester's Brown. "But internal Web software providers must also follow Lotus's lead and adopt directory management standards like X.500."

The biggest security threat in both environments, however, stems not from technological limitations but from a lack of appropriate security policies and procedures, according to Goulde. "Implementing proper se-

curity policies, making sure people have passwords and that systems are properly protected—those issues are the same for Notes or the Web," he explains. "You can go to a Notes server and find it as vulnerable as you can a Web server." However, Notes may encourage security policy development more than the Web because security and hierarchical access are built in. Comparable Web technology is not yet as easy to use, says Goulde.

A Tough Decision

FEW IS EXECUTIVES CAN AFFORD to wait until the Web/Notes competition shakes out. Therefore, business needs should drive the decision whether to adopt one or the other—or both. For companies that require high levels of security, workflow capabilities or replication of databases for mobile workers who can't always be connected to the Web, Notes is the way to go—at least in the short term. "Notes right now, today, is a better platform purely and simply because it's got the functions in it," says Cameron. "But its competition is coming fast. And it won't just be coming from Netscape. In fact, the more competitive products will be coming from the database vendors." For organizations that need to share information far and wide

FOR MORE ON THE WEB/NOTES DEBATE...

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and for whom security and workflow capabilities aren't pressing issues, an internal Web site offers an inexpensive solution as well as the benefits of an open environment and ease of communication with the outside world.

"When Notes provides an ability to deliver an application you have to have, it's justified," says Goulde. "But even if you're not using the Web as a Notes replacement, you need to build Web competency. The bottom line is, it's not the Web versus Notes, it's the Web *and* Notes, particularly for current Notes users." 

Alice Dragoon can be reached via e-mail at adragoon@cio.com.

An abstract painting in a textured, painterly style. At the top, a hand with red-painted fingers holds a knife. Below, a brown rectangular object, possibly a book or folder, is shown. The background is a mix of white, grey, and blue tones, suggesting a cracked ice surface. A large, dark, jagged crack runs across the lower half of the image.

“In skating over *thin* ice, our safety is in our speed.”

– Ralph Waldo Emerson

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Deploying Lotus's groupware to the enterprise requires software, programmers, cash and support from upper management. And the burden of proof falls squarely on IS's shoulders.

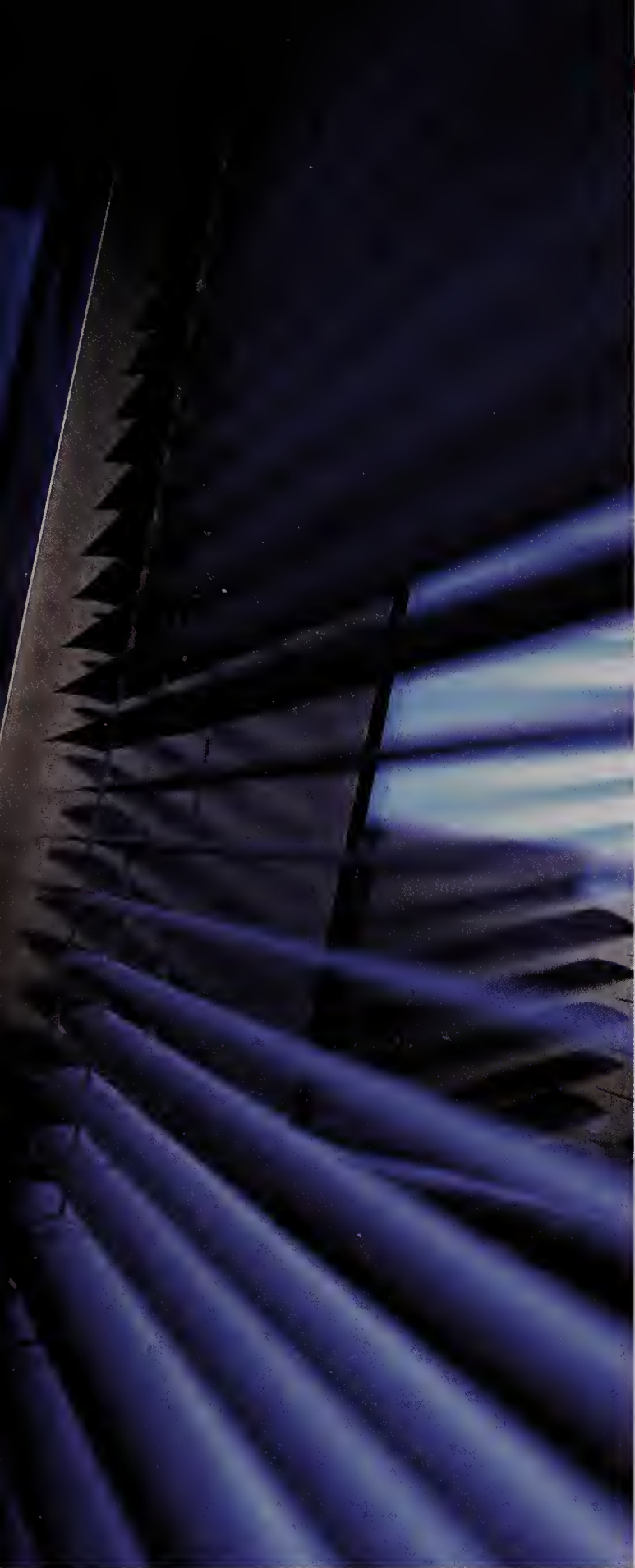
By Tracy Mayor



IT'S GETTING EASIER AND EASIER for corporations to take their Lotus Notes programs out of the planning stages and onto the desktops, thanks to reduced prices, a just-released version and an increased understanding of the product among top management. But there's a lot more to fully exploiting Notes than setting up replication certificates and sponsoring departmental applications.

As Notes becomes more firmly entrenched in an organization, top-level managers, end users and everyone in between are likely to begin requesting ever more ambitious groupware projects—a Notes-based EIS (executive information system) incorporating data snapshots from around

PHOTO BY REID HORN



the company or a workflow application that taps legacy data from a SQL database. The more you use Notes, the experts say, the faster you'll recoup your initial investment, and the higher your payback will be.

By the same token, enterprise groupware applications require a significant ongoing commitment from the IS department. Companies are discovering that Notes isn't so much a software purchase as it is a way of life, complete with ongoing relationships with everyone from C programmers and Lotus business partners to Notes evangelists from within their own employee ranks.

What expansion won't affect, at least not in any negative way, are end users. Once a company is over the initial bump of teach-

ing users the mechanics and the philosophy of Notes (and it can be quite a bump), there is frequently little more that needs to be done by way of training. For example, BSG Alliance/IT Inc., an Austin, Texas, systems integrator, developed an intuitive time and billing system that uses Notes as the communications infrastructure surrounded by custom-developed front-end and back-end hooks into the firm's Oracle database. The project required third-party development tools and programming prowess, but to the end user it is simply another Notes service.

What kinds of challenges can you anticipate if you're just beginning to expand Notes? The answer depends on several factors, including how well you understand the program's strengths and limitations before you make your initial purchase; the size and scope of infrastructure issues, which can encompass everything from overburdened desktop PCs to undertrained programming staff; and how easy it will be to secure additional money for your projects.

IS managers and Notes consultants agree: It's crucial to understand what Notes can and can't do before you begin. The number-one mistake is over-enthusiasm, as new Notes converts begin to believe the product can do everything from delivering the mail to balancing the budget.

"Some people have a vision of Notes as all-encompassing, but it's just not an application design tool on the front end," says Eric Reed, director of applied technology at BSG, which uses Notes internally and offers it as part of a systems solution to its customers. "Even with all the capability of Release 4, you can't do everything in one tool."

Notes is a flexible database and communications vehicle that can lend itself to many uses, but it also has limitations, including performance problems when handling large amounts of data or a high volume of traffic; limited built-in connectivity to relational and legacy databases; an inflexible user interface with limited search capabilities; and a lack of full support for functions such as charting and reporting.

To get around such problems, IS often must put in some time and research comparison shopping. While some problems can be solved with programming from scratch in C, many managers say they prefer to use one of several front-end development tools; buy gateways and data-access tools that make the connection between Notes and a variety of mail and database

"We're still in the infancy stage of what we can do with Notes, but the money guys are happy."

—Gary Adams

"People don't
like surprises,
so managers
have to budget
costs accurately."

—Scott McCready

systems; or purchase shrink-wrapped Notes applications sold by Cambridge, Mass.-based Lotus Development Corp. and a burgeoning market of third-party vendors (see "Notable Additions," Page 74).

Infrastructure issues crop up in a Notes expansion as well. An ambitious or more widely distributed Notes application will max out lower-end desktop systems and thus necessitate an upgrade. LAN traffic can also get bogged down, although this happens less frequently. Staffing requirements nearly always increase. As the scope of Notes projects expands, companies often must add dedicated Notes developers or borrow them from other projects, and existing programmers often require training on new tools.

Not surprising, as the project expands, so do the money requirements, and the added cash can be difficult to wring out of a finance department that believes it has already spent a significant sum on an initial Notes rollout. The best way to avoid financial grief is to be well-informed and upfront about Notes' benefits and limitations. If it looks as if you'll need additional tools or personnel, say so early on. "People don't like surprises. Managers have to budget costs accurately," says Scott McCready, a vice president at International Data Corp., the Framingham, Mass., market research division of International Data Group, CIO's parent company.

IDC surveyed its clients to develop rough per-seat budgeting guidelines for Notes based on what a company wants to do with the program. For discrete business environments such as a marketing department, budget \$2,500 to \$3,000 per seat. For enterprisewide applications, lower the figure to an average of \$1,600 per seat. If you're purchasing Notes with an eye toward redefining the enterprise, including building links to outside companies, plan on \$4,000 per seat. Those numbers may seem high to the uninitiated, says McCready, but they're all-inclusive and weighted to encompass every expenditure from the software itself to installation, integration, maintenance, training, security and LAN support.

Release 4 may bring those numbers down somewhat, primarily through additional development tools that include Lotus-Script, an object-oriented structured programming language and integrated Web browser that creates a much tighter link between Notes and the Internet, enabling developers to use the World Wide Web as a front end and Notes as a workflow-process-

ing engine on the back. In addition, improved scalability and performance mean developers can write applications that take further advantage of Notes' remote database-replication capabilities (see "Open to Debate," Page 46).

Although budgeting for a Notes expansion can be tricky, and executing it can involve a few false starts and dead ends, the payback can be huge. "The price of the software is very often just a starting point," and there is "some sticker shock" when companies first look into Notes, says McCready. "But the message is, you're going to make money with Notes. Companies are saving millions of dollars automating the kinds of activities that tend to be accomplished manually right now. If you're not getting big bang for your buck, you're doing something wrong."

Penny Wise

HOGAN SYSTEMS INC., A DALLAS-based developer, marketer and seller of financial software systems, was drawn into Notes after using the company's cc:Mail product. Managers wanted an easy way to broadcast documents and data among its virtual work teams. The company developed Notes databases to create documents that can be easily routed throughout the organization for comments and approval from multiple people.

After the initial applications proved popular among the company's more than 250 Notes users, top managers suggested a more ambitious project. The goal was to build a companywide Notes application that could present top-down views of all client information, contract information, outstanding client logs, news feeds and other executive data snapshots, says Gary Adams, MIS technical lead for Hogan.

At that point, inadequate database links in Notes forced the company to look elsewhere for a database tool that would allow it to extract data from Hogan's Sybase database. Adams and others chose a product that looked as if it would do the job relatively inexpensively. But the software, advertised to support certain database fields, also caused the system to crash if users inserted a hard-carriage return in the middle of the field.

Next time out Hogan chose the considerably more costly but Notes-dedicated Notrix package from Percussion Software Inc. in Stoneham, Mass. "Notrix worked

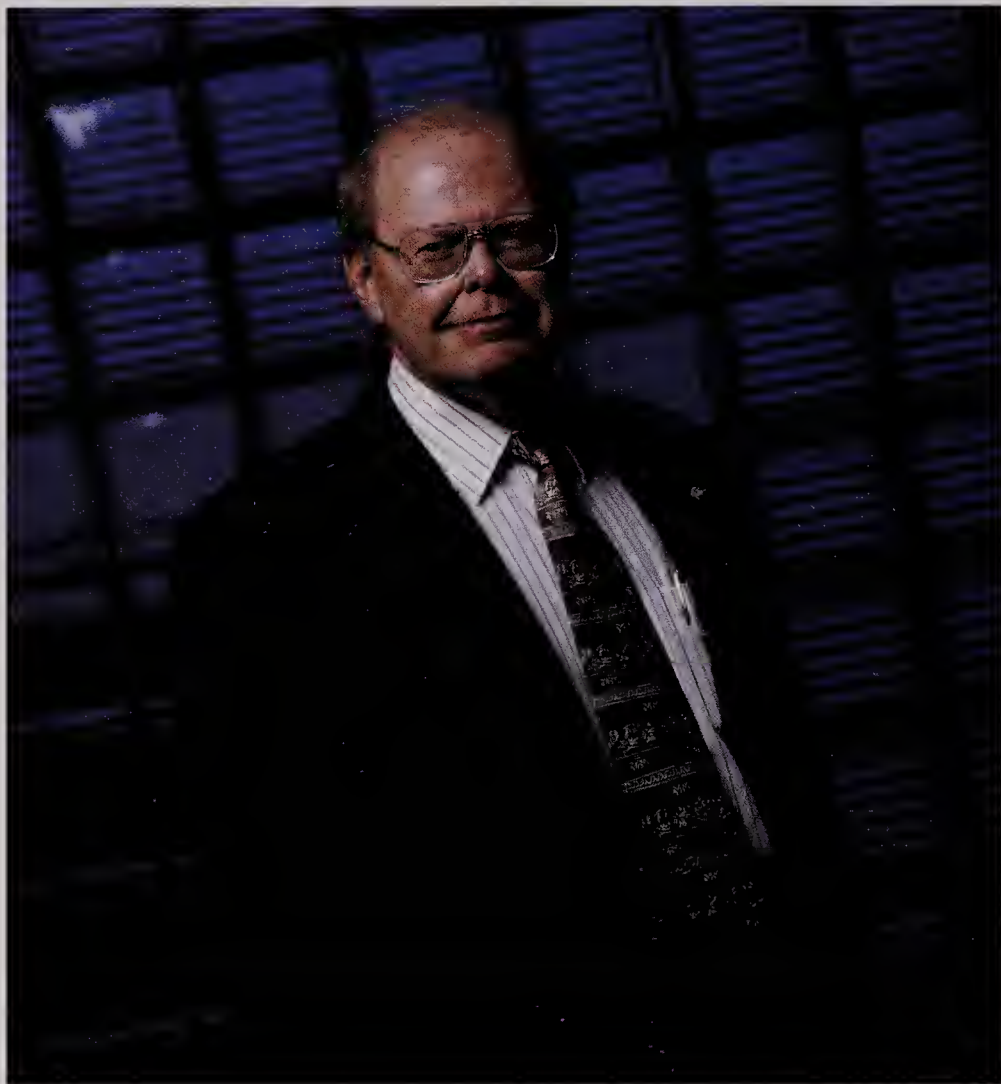
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"If you want to produce a report, Notes' full-text search doesn't buy you much. You just can't index Notes databases the way you can a relational database."

—Raymond Blanford

wonderfully," Adams says. "We installed the package, set up a mapping document and mapped the fields from Sybase to Notes. It was a one-time drop, and it was done."

Is there an easier way to test out the compatibility of a third-party package? Adams says probably not. "You fire some specific questions at [vendors] and see if the package fits your budget," but it's not until the product is actually installed that some problems come to light, Adams says. "You can read all the literature in the world, but you never know until you try it out."

And although Hogan wound up investing in a pricey add-on tool. The budget negotiations were tolerable. But management is satisfied overall with the Notes payback thus far. "We're still in the infancy stage of what we can do with Notes, but the money guys are happy," Adams says.

An Interesting Development

AS A MAINFRAME PROGRAMMER turned Notes developer, Raymond Blanford is in a good position to put Notes' strengths and weaknesses in perspective. Blanford is employed by Torrance, Calif.-based Logicon Inc., a technology contractor to the U.S. government, and works full-time consulting with a Logicon customer in Washington.

The customer adopted Notes in mid-1992 with the idea that it would serve as an e-mail-enabled application development environment. But management initially underestimated the amount of programmer attention necessary to bring applications to life under Notes version 2. "Managers expected that we'd be composing views and creating forms," says Blanford, "but they didn't anticipate how much API manipulation and C code we'd use. [Version 2] just wasn't all that flexible."

Today, a little wiser but still committed to Notes, the agency supports a Notes user community that numbers in the thousands, with some 500 Notes users connected to Blanford's Arlington, Va., office alone. Blanford, himself one of 50 or so programmers who writes Notes applications and provides end-user support for the program, is at work on two workflow applications using Percussion Software's Notrix and ViP, the Notes development environment that Lotus sold to Revelation Technologies Inc. in Stamford, Conn., last year.

Blanford, like the folks at Hogan, is using third-party tools to create the systems, which expand on the limited workflow capabilities of the basic Notes package. For example, the smaller of Blanford's two workflow projects actually takes Notes-based data and ports it back to a SQL database. The reason? Reports. A Notes-type database is good for many tasks, Blanford says—the database structure in Notes is more dynamic, and you can add a field overnight rather than in days or weeks—but reporting isn't one of them. "If you want to produce a report, Notes' full-text search doesn't buy you much." Blanford says. "You just can't index [Notes] databases the way you can a relational database." The Notes mentality was that they would replace reports with views, but "that's not the way business works," Blanford says. "Reports have been around for a long time."

Even with success, Blanford says, justifying the cost of Notes and of additional tools can be tricky. "You should be able to prove the savings, but they're not always obvious to measure," he says. Time savings is one potent argument, he says. In addition, the ease of programming means that employees other than traditional programmers can often develop their own databases, saving the company time and money.

Continued on page 62

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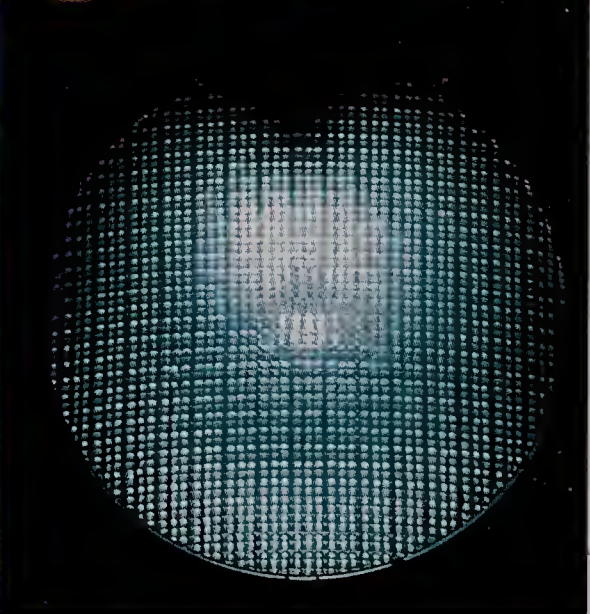
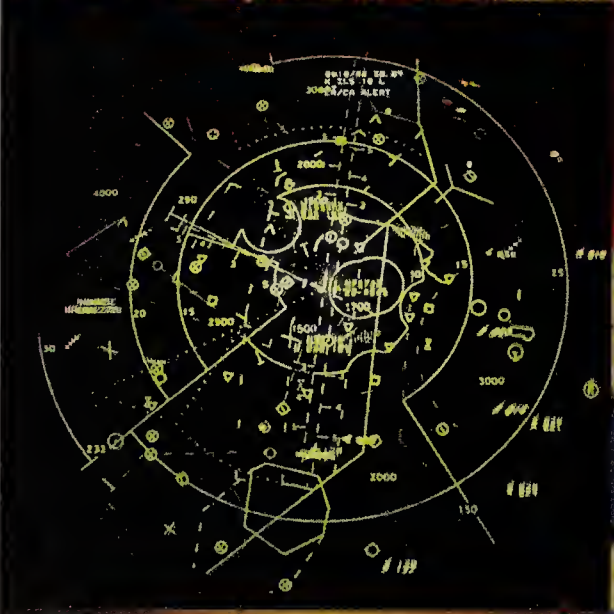
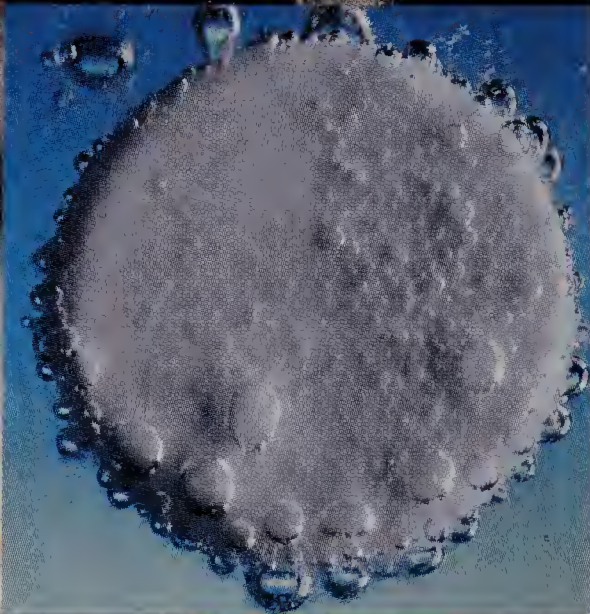
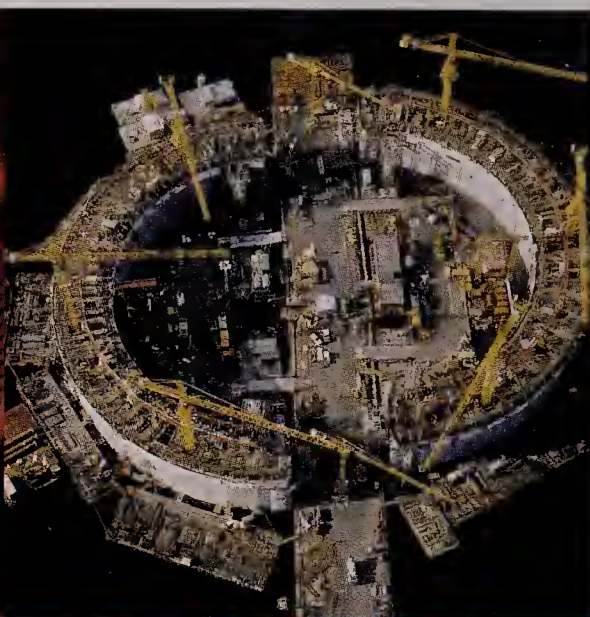
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"There was no practical way to connect users directly into the Oracle database. And besides, who wants to manage that kind of a sensitive connection?"

—Eric Reed

Billable Ours

SYSTEMS INTEGRATOR BSG Alliance/IT Inc. initially bought into Notes to obtain a reliable infrastructure that enabled its myriad, far-flung consultants to use its replication features to communicate with the home office. The program took hold with a vengeance—most communications and business administration tasks now reside in Notes and are automatically routed to the correct parties for approval once they are filled out.

So it was only a matter of time before Notes made the connection with the company's bread-and-butter applications. When BSG installed a new Oracle-based time and billing system—an application at the heart of its business that lives and breathes billable hours—managers looked for an easy, seamless way to enter and validate client billing information from individual consultants. Previously, consultants had to fill out time sheets by hand that were then routed through clerical workers who entered the data multiple times in various forms and databases. Calculations such as those needed to accommodate higher billing for weekend and holiday work were also cumbersome.

BSG decided to use Notes, which had already proved itself a reliable way to route information to the consultants. Traveling

employees could enter data offline and replicate their databases back to the home office when convenient.

But if Notes' communication infrastructure lent itself to the billing application, its interface and database connectivity needed work. On the back end, programmers wrote custom-built C programs on the OS/2 Notes server that regularly accessed the Oracle database to obtain reference information and distribute it out to end users. On the front end, Powersoft Corp.'s PowerBuilder development tool provided a way to develop a completely customized, user-friendly interface, which would have been "extremely difficult to develop with raw Notes," says BSG's Reed.

The result is a system that eases the burden of entering and tracking all those billable hours. "The application recognizes who you are and understands the proper weekend days and holidays to calculate overtime hours and charge appropriately," says Reed. From there, the reports are validated against the Oracle database and then inserted into it. End users receive an optional acknowledgment when the data has been accepted by the Notes database and an automatic acknowledgment when the data has been validated. Similarly, the system generates a Notes mail message if it encounters any time problems or other errors in the time sheet.

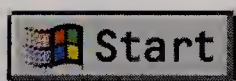
From a corporate point of view, BSG has been able to shorten dramatically the amount of time it takes between receiving reported hours and billing them; a two-week turnaround has been cut to a couple of days. Specifically, managers can generate invoices within 48 hours of receiving the last time sheets for a project, according to Reed.

Though the project was completed by a specially assembled team of programmers and consultants rather than by BSG's IS department, Reed stresses that the same cost-justification process his clients require was applied internally as well. "We need to see justifiable effects," he says. "We're basically acting as a consultants to ourselves." But when the in-house project comes off successfully, BSG reaps a double benefit. "It's a good way to show customers a good application of two tools," Reed says. "We can say to customers, 'Here's one way to use these types of technologies.'" **CIO**

Tracy Mayor is a freelance writer and editor in Beverly, Mass. Her e-mail address is tmayor@shore.net.



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PEOPLE ISSUES

If your destination is the Utopia of corporate collaboration, you've got to discover and manage the behavioral and organizational factors that drive and derail many groupware efforts. It's a matter of applying...

A LITTLE OF THAT HUMAN TOUCH

By Carol Hildebrand

“**S**O THAT'S THE BASIC SETUP. If anybody has any questions, concerns or complaints, now's the time to speak up.” Our Lotus Notes implementation team recently gathered the entire *CIO/WebMaster* editorial staff to demonstrate the prototype of our first groupware project, a source database. As a member of the team, I had great hopes that the application would create a collaborative stew of sources that would yield rewards greater than the individual caches of contacts from which it was concocted. Naively, we looked for a general show of enthusiasm from the editorial staff, but hands were waving like laundry in a March wind. “Will I be able to add expertise keywords to the list?” (No.) “How about individual searches—how easy are they?” (Not very.) “Do I have to tab through every field in this order when I enter a source?”

(Um, yes, unless you want to use the arrow keys.) “My own source-management software is much easier. Why should I use this one?”

Therein lies the rub. Our prospective users were essentially asking why they should embrace technology that necessitates lots of immediate work, learning and change but delivers no instant reward, only a vague prospect of productivity payoffs somewhere off in the mist.

So it is with any brand of groupware: It instills not only the fear of unknown technology but, more ominously, the fear of wholesale organizational change. The prospects for enormous productivity rewards are there, but any company contemplating a foray into collaborative computing, or indeed, even collaboration sans technology, must examine the organizational and behavioral factors that undermine so many of these projects. “When it comes to group-



ware implementation issues, I would say that maybe 95 percent consists of people issues and 5 percent technology," says Andrew B. Whinston, director of the Center for Information Systems Management at the University of Texas at Austin.

While it may be tempting for CIOs to eschew the larger people component and concentrate on the familiar hardware/software/project-management portion that makes up Whinston's 5 percent, doing so could well doom a budding groupware project to life as an expensive e-mail platform. "The sad truth is, IS can do a world-class

deployment and have replication proceed flawlessly, but if the data is junk and people don't use it, who the heck cares?" asks Michael Schrage, a research associate at MIT's Sloan School and Media Lab and author of *No More Teams! Mastering the Dynamics of Creative Collaboration* (Doubleday Currency, 1995—see review in Trendlines, Page 22).

Unfortunately, many companies are more comfortable with technical issues than human ones, and it shows. Thomas H. Davenport, director of the IS management program at UT Austin and a CIO columnist,

estimates that probably no more than 10 percent of Notes projects actually employ its collaborative functions, such as discussion databases. Those aspects are underutilized not because of faulty technology but because the technology is often deployed without considering how the organizational structure must change to support it.

Corporate neglect of these human factors may well arise from groupware's roots as a head-count replacement in many businesses. The technology gained attention as a way to improve productivity in companies decimated by downsizing. Executives theorized that if cross-functional groups worked and shared information online, productivity would increase without a commensurate head-count uptick. (Schrage calls the concept "groupware as tourniquet.")

The fact is, companies can encourage collaboration without putting so much as one database online. Companies like 3M Co. and McKinsey & Co. fostered a collaborative atmosphere long before Notes was



plement groupware because it answers a justifiable business need, not because it's popular. "It's got to be aimed at solving a problem," Paulk says. "You should start by examining your strategic intent." For example, Andersen used Notes as a base for its Knowledge Exchange, a global system of sharing intellectual capital, the company's most important resource. "We wanted to be able to deliver a higher value than one individual consultant could," he says. Notes' collaborative features, such as its discussion databases, were a natural fit.

Robert Rodin, CEO of Marshall Industries, an electronics distributor in El Monte, Calif., agrees. Without examining its core competencies, a company can wind up automating bad processes with groupware. "If [employees] are doing something wrong and you give them a faster car, they'll just smash into a wall that much faster," he says.

So, make sure the solution fits the problem. "I'd ask, 'Why do you want a collaborative project?'" says Carla J. Paonessa, Andersen's managing partner of change management. "Maybe for the market you want, you don't even need a team."

Fit the Function to the Form

ONCE BUSINESS EXECUTIVES ARE satisfied that groupware is indeed an appropriate solution, they should next look at how it will work within their organizational structure. Unlike standalone applications such as spreadsheets, groupware is sensitive to the social ebb and flow of company culture. What a company gets out of groupware has a lot to do with how the company is set up. For example, Stone Container Corp. is a traditional, hierarchical organization, says Roy Rumaner, the Chicago company's Notes administrator and developer and senior systems analyst. (If you've ever gotten a sack of hamburgers from McDonald's, you've seen an example of Stone's handiwork.) Rumaner is planning the initial groupware rollout accordingly. "The whole Notes setup has to be hierarchical, so if you're in X department, you do

"It's got to be aimed at solving a problem. You should start by examining your strategic intent."

—Charlie Paulk

more than a gleam in Ray Ozzie's eye. The key is not the technology but a commitment to support increased communication and sharing of ideas and space. "Groupware is not a technology solution to an organization problem," says Schrage. "It's a social solution that uses technology to solve an organization problem."

Any IS group worth its salt should indeed think about such technical considerations as groupware's impact on network traffic or how much it will cost to install all that software. But other issues merit discussion not only within the IS environs but on Mahogany Row, in human resources and in each business unit. Collaboration, it seems, begins at the very beginning.

Examine the Business Goals

THIS PREREQUISITE SEEMS AS obvious as a smack upside the head, but Andersen Consulting Managing Partner and CIO Charlie Paulk has had more than a few calls from Andersen clients saying, "I've bought groupware X, now what should I do with it?" Companies should im-

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not have access to Y department's information," he says. Stone will start by using Notes primarily for e-mail. This may seem antithetical to exploiting the collaborative benefits of groupware, but it suits Stone's organizational structure.

Similarly, groupware's electronic record of events might be most appealing to control-oriented organizations. "If I'm in an autocratic company, I love Notes," says Schrage.

"If I'm in an autocratic company, I love Notes. The boss has a whole new way to look over your shoulder."

—Michael Schrage

"When I send out a memo, I can check who's logged in and read the memo or see who has made modifications. The boss has a whole new way to look over your shoulder."

It's not a sin to value groupware for reasons other than its collaborative possibilities, but chances are your company will not experience what Paonessa calls the "spiritual conversion" that one might think would naturally flow from collaborative computing. Instead, says Schrage, "groupware may change the organization a little, but the organization will probably change the technology a whole lot more."

What if a company's organizational structure doesn't jibe with its groupware vision? Say, for example, the CEO plans to take full advantage of the collaborative elements of groupware, but most of the workforce views departments other than their own as alien nations? "You need to meet the needs of where a company is at that given time," says Chris Newell, executive director of the Lotus Institute in Cambridge, Mass., Lotus's think tank for groupware research and education. As in the case of Stone Container, it might be best to start with a nonthreatening introduction. By using groupware for e-mail or workflow, companies a little further back on the collaboration learning curve can lay the groundwork for more comprehensive collaboration to come.

Encourage Participation

IMPLEMENTING GROUPWARE in smaller steps also affords companies time to analyze how to share information, a cornerstone of collaborative work. Successful sharing demands enthusiastic give

and take among a company's knowledge workers. But if a workforce believes that personal accumulation of exclusive knowledge results in a commensurate accumulation of power, nobody will add anything of import to an online discussion. And unlike the scientific community, in which authors acknowledge fellow scientists' work in a subject, corporations seldom foster a culture of attribution. "You have to celebrate and make visible those who have contributed something that's helpful to you," says Paonessa, who uses the Knowledge Exchange regularly. In addition, the knowledge must flow both ways. "If you don't put something on the Exchange that's valuable, you really don't have a right to take something off it," she says.

There is often a disparity between the amount of work employees put into a collaborative system and the benefits they glean from it, according to Jonathan Grudin, associate professor of information and computer science at the University of California at Irvine. For example, a department manager might see the benefits of a group calendaring system and encourage his department to use it, touting the collective benefits of



smoother scheduling and better resource allocation. But for them, this means new software to learn and some loss of personal autonomy as the scheduling becomes more structured. "It really gets at the issue of who's going to benefit and who's going to have to do more work," Grudin says. While we would all like to imagine we could subjugate individual needs to the collective benefit of the group, human nature is frail. To encourage knowledge sharing, executives must align incentives and rewards with the collaborative initiative.

One of the first questions Schrage asks his clients is, "Are you rolling out the new incentive structure at the same time as the groupware installation?" He adds, "If you don't naturally have a culture that supports sharing and attribution, then you need to

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have incentives to do so."

One of the best ways to encourage enterprisewide groupware acceptance is to lead by example. Paonessa says that most of the managing partners at Andersen communicate almost exclusively through the Knowledge Exchange. The general message is that if you want to talk to somebody senior, you have to look for them on the Exchange.

"It takes top-level action," agrees Davenport. "[CEO] Jack Welch at GE has supposedly fired people for protecting their information turf."

Employees will also find powerful motivation to share if part of their compensation is based on such activity. Many of the big consulting companies, such as Coopers & Lybrand, McKinsey and Andersen, measure employee contributions to collaborative efforts as part of their formal evaluation process. Marshall Industries' Rodin says that appropriate compensation is vital to success. He encourages knowledge sharing among the company's 600 salespeople by paying them salary plus profit sharing rather than the more traditional commission on individual sales.

While we would all like to imagine we could subjugate individual needs to the collective benefit of the group, human nature is frail. To encourage knowledge sharing, executives must align incentives and rewards with the collaborative initiative.

Once an organization has gained the support of what Grudin calls the "critical mass" necessary to get groupware going, the behavioral infrastructure of the company will change, and groupware use will become the norm rather than the exception. As this occurs, peer pressure will frequently bring the laggards in line.

Teach Teamwork

EVEN WITH PROPER INCENTIVES, prospective users will balk at using groupware if they lack the skills to work in groups. "It's absolutely true that working in groups takes skills and techniques that you don't use in working on your own," says Bruce Hasenyager, chief technology officer at AIM Management Group Inc., a financial services company in Houston. Hasenyager, who was one of the

chief proponents of Notes at Chemical Bank and is currently deploying Notes at AIM, says processes for, say, team creativity are markedly different from individual creative endeavor. And lone workers generally do not have to deal with conflict resolution at all.

Pam McPhee, director of the Browne Center, a team training facility in Durham,



N.H., says that online groups must also establish early on norms for honesty, integrity and responsibility. Then she suggests that they talk about what working in a team means to each individual. "Not everybody will have the same idea of how to make decisions or how to run a meeting," she says. And the communication dynamics change as online workers lose the nonverbal cues of face-to-face discussions and switch from oral to written skills. This is where a good group moderator is key, she says. "You need somebody who can pick up nuances and sense when somebody is not on board on a team."

Even in the most collaborative of environments, there are bound to be times when it seems more people are off the bus than on; that's the nature of any project that depends on the ability of many individuals to work as one entity. As our magazine's own Notes project team can attest, what were once neatly tied-off details have a distressing tendency to unravel in the face of conflicting desires and interests. (Look for details in upcoming issues of our firsthand struggle with the concerns addressed here.) In finally approaching production mode on our first Notes application, the team has discovered that what we thought would be the beginning of the end is rather the end of the beginning. Rightly so, says Paulk. "It just doesn't stop," he notes. "It's a journey, not a project with an end." **CIO**

Carol Hildebrand, who can be reached at cjh@cio.com, welcomes advice on facilitating CIO/WebMaster's groupware project.

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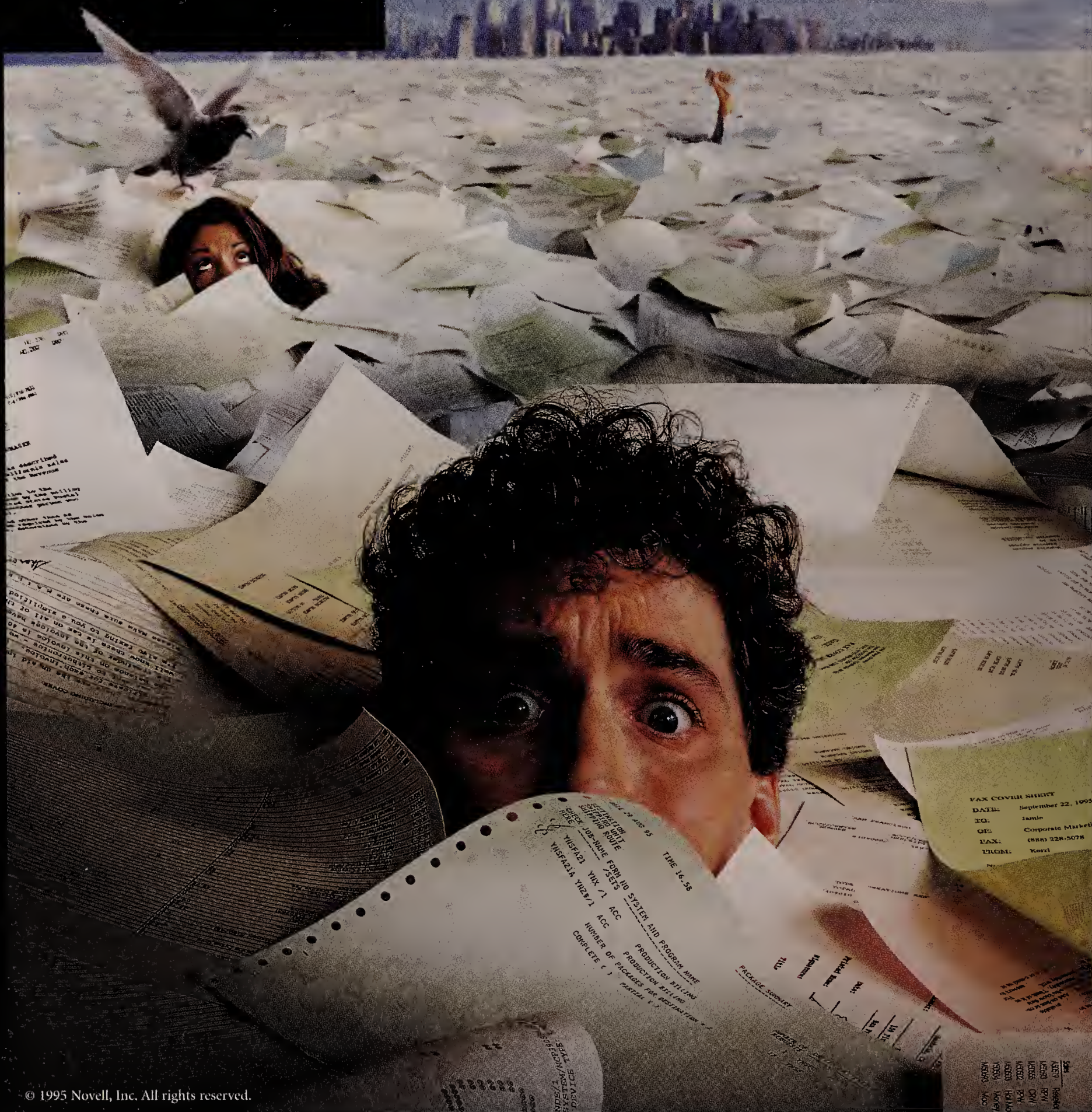
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Notable Additions

As a testament to the increasing importance of Notes, the market for third-party tools has grown enormously in the last three years, creating a wealth of add-on products for Notes developers and administrators

BY SALLY BLANNING DEJEAN

Despite its own marketing hype, Lotus Development Corp. never intended Lotus Notes to be a do-it-all product. From the beginning, the Cambridge, Mass.-based subsidiary of IBM Corp. depended on third-party vendors to fill in the gaps and create the integration that makes Notes so useful and versatile.

There is still no product on the software market that, feature for feature, equals Notes. Users tout its ability to manage text-based documents and multiple objects within those documents and praise its built-in communications and security features as well as its workflow and collaboration capabilities. For third-party vendors, Notes provides the structure and communications services that would be difficult to duplicate. Their add-on products tend to either piggyback Notes' repository and document management capabilities or enhance the distribution and replication features of its infrastructure.

These add-ons can be smart buys, depending on what a company needs. Costs vary by the number of seats or

server sites purchased, but most companies will save money overall by using add-ons because they can eliminate the need for pricey Notes consultants and custom development.

As a Notes consultant, I am sometimes astonished by the extent to which an organization will go to avoid buying a Notes add-on product when its own solutions are often more expensive to implement, more awkward to use and less reliable. Notes should be thought of as a key part but not the only part of a total solution. Even as organizations move to Notes Release 4, which started shipping in January, they will still need add-on products and services. Those that seem most in demand fall into six general categories.

Ready-to-use Notes applications meet specific business needs and offer an almost overwhelming number of choices. They include help desk, project and client tracking, scheduling, modified calendaring, courseware, executive information systems, and ISO 9000 certification aids.

The most successful Notes applications are those that emphasize its strengths: collaboration, basic workflow, communications and security. They can be installed quickly, need relatively few modifications and are easy to use. Many of the applications are actually a suite of applications that work together to link separate databases (or modules) with macro programs and e-mail. Some also require programs that run on a server to coordinate and schedule the work.

The vertical markets have some clear winners. Legal Services Suite (LSS) for Lotus Notes from Group-Quest Software Inc. comprises eight Notes modules for managing litigation. Some modules act as repositories for contracts, clauses or briefs, including those from scanned images of documents. Other modules track



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—Compiled by Sally DeJean

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HRQuest Professional Suite from GroupQuest Software manages human resources tasks such as posting jobs, organizing resumes and managing company policies as well as tracking job-candidate interviews.

Help Desk Management System from QXCOM Inc. and Help Desk from Synectic Systems Ltd. both track help-desk calls and maintain up-to-date reference databases.

Other products serve a more general market. Quality at Work Business Builder from Quality Decision Management Inc. manages projects with an ad hoc workflow method that enables users to determine the structure they want and to redefine it as needed.

Although Notes has not yet been integrated successfully with a true personal information manager, Notes calendaring and scheduling applications work well for scheduling office events and conference rooms. Group information managers such as WorkFlow Designs Inc.'s @ScheduleBase and Calendar by Financial Services Software Inc. cleverly help Notes manage meetings, notification and attendee availability.

Tools that integrate Notes with other applications enable users to take advantage of Notes' capabilities for distributing information and organizing documents. When users want to circulate portable documents in controlled circumstances in an organized format, nothing works as well as Notes' distribution, security and replication capabilities.

Comments and additional graphics can be added as a Notes response document because Notes' rich text fields also accept graphics (and other objects). Notes is an object linking and embedding (OLE) client and integrates well with many OLE server applications. Furthermore, some products are enabled with Notes/FX, which uses OLE to provide data exchange at the field level rather than for the entire object and can be even more tightly integrated with Notes.

Folio Corp. developed Folio Fusion to move data created in Notes into its own multiplatform database,

the status of cases with ties to yet other time-tracking modules and vendor lists.

Notes serves the medical-office market with a suite of databases called CliniX from Chart Links Inc.

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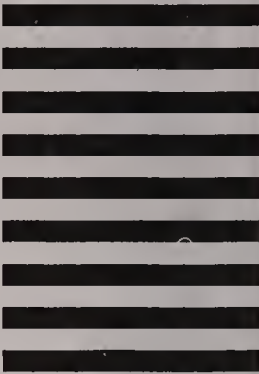
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called an "infobase." Infobases can hold up to a terabyte of data and are fast-access databases that, like Notes, can incorporate video, audio, graphics and text into their documents. Infobases lack Notes' workflow and collaboration features; their documents are meant to be viewed rather than edited and changed. However, because infobases can handle great quantities of data, organizations find them useful for transferring or archiving very large Notes databases. Folio Fusion moves the Notes documents into an infobase with the formatting, document links (called "doclinks" in Notes, they create a hypertext-like connection between two or more documents) and graphics intact. It also enables users to search across a Notes and a Folio database and create cross-references between the two in the form of doclinks.

Two other products—Common Ground from Common Ground Software Inc. and Acrobat from Adobe Systems Inc.—can be integrated with Notes by creating "portable documents," such as electronic pictures of Word Pro or QuarkXpress documents. With Common Ground, a user prints to a disk rather than to a printer. The document is saved as an object in a Notes document, usually indicated by a large thumbnail icon on the first page of the document. Clicking on it opens the entire document in a Common Ground Viewer. When Notes/FX is enabled, fields in the document are mapped to Notes fields.

Notes can act as a front end, a back end or middleware to other products as well as function as an independent application. Notes-savvy users may find it easier to access other data sources from within Notes. Percussion Software's Live! allows Notes users to call data from external databases. The data appears to be in a Notes document, but a live link between the external data and Notes enables users to query other databases in real-time. Notes provides the framework for viewing or editing the data as well as for adding new documents.

OfficeLink by Brainstorm Tech-

nologies Inc. will transform Notes into a back-end data repository. It enables Microsoft Word or Excel users to save and retrieve their documents in a Notes database without launching Notes. This approach is advantageous for people who use Notes mainly for its replication and distribution capabilities but work infrequently in the Notes environment. Their documents can be dis-

**Most companies
will experience an overall
savings by using add-ons
because they can eliminate
the need for pricey Notes
consultants and custom
development.**

tributed and replicated in the background; conversely, they can work entirely from within Notes.

Taking another approach, Oberon Software's Prospero offers a visual tool to integrate Notes with any OLE server application, including Word, Excel, Symantec Corp.'s ACT! and any database compliant with Microsoft's open database connectivity (ODBC) standard. It is a straightforward point-and-click application that can pull data from more than one source.

Import IT! from GroupQuest visually maps fields between a Notes database and Lotus 1-2-3, dBASE or an ASCII text file and reformats the data according to user specifications. The import file can be saved and reused, and it will not overwrite existing duplicate files.

Notes doesn't do everything well. It is difficult to build reports in Notes, for example. Notes views bear similarities to tabular reports, but they can display only one document per line—an advantage for onscreen display but not for printed reports. (The limitation changes in Release 4, but reports are still difficult to make from views.) Revelation Software's

Revelation Reporter solves that problem and can even recalculate data pulled into the report for further analysis and breakdown.

Action Technologies Inc., Reach Software Corp. and Workflow Inc. have developed products to force Notes to adhere to highly structured, complex rules-based workflow that is impossible to build in native Notes. Lextyle by Pantano Genesis Corp. takes a rich text-formatted document and turns it into a Notes database. It preserves the original graphics and formatting as it comes into Notes and uses styles or formats to break the document into Notes documents, creating a hierarchy of main and response documents. It can be used to create and distribute office-policy manuals, human resources documents and technical documentation. Codes can be embedded to translate to HTML so that Notes databases can be published on the Web.

If you are contemplating putting your Notes data on the Web, you will need several additional products that convert Notes documents into HTML. One is Tile from Walter Shelby Group Ltd. The other is Lotus's InterNotes Web Publisher, which Lotus is now offering free of charge. It is also distributing an InterNotes Web Navigator consisting of a database and a server program that maintains access to the Internet. The server runs TCP/IP, but the client workstations do not.

Taking the time to explore add-on products may save an organization time and money. Any serious Notes shop would be remiss if it did not investigate and test the new products on the market. Most vendors provide demonstration disks or evaluation copies to interested clients and give references from customers. If you do buy an application, make sure it is from a reliable vendor that offers support and setup, if needed. **CIO**

Sally Blanning DeJean is a writer and consultant specializing in Lotus Notes and based in Newton, Mass. Her e-mail address is 76354.3216@compuserve.com.

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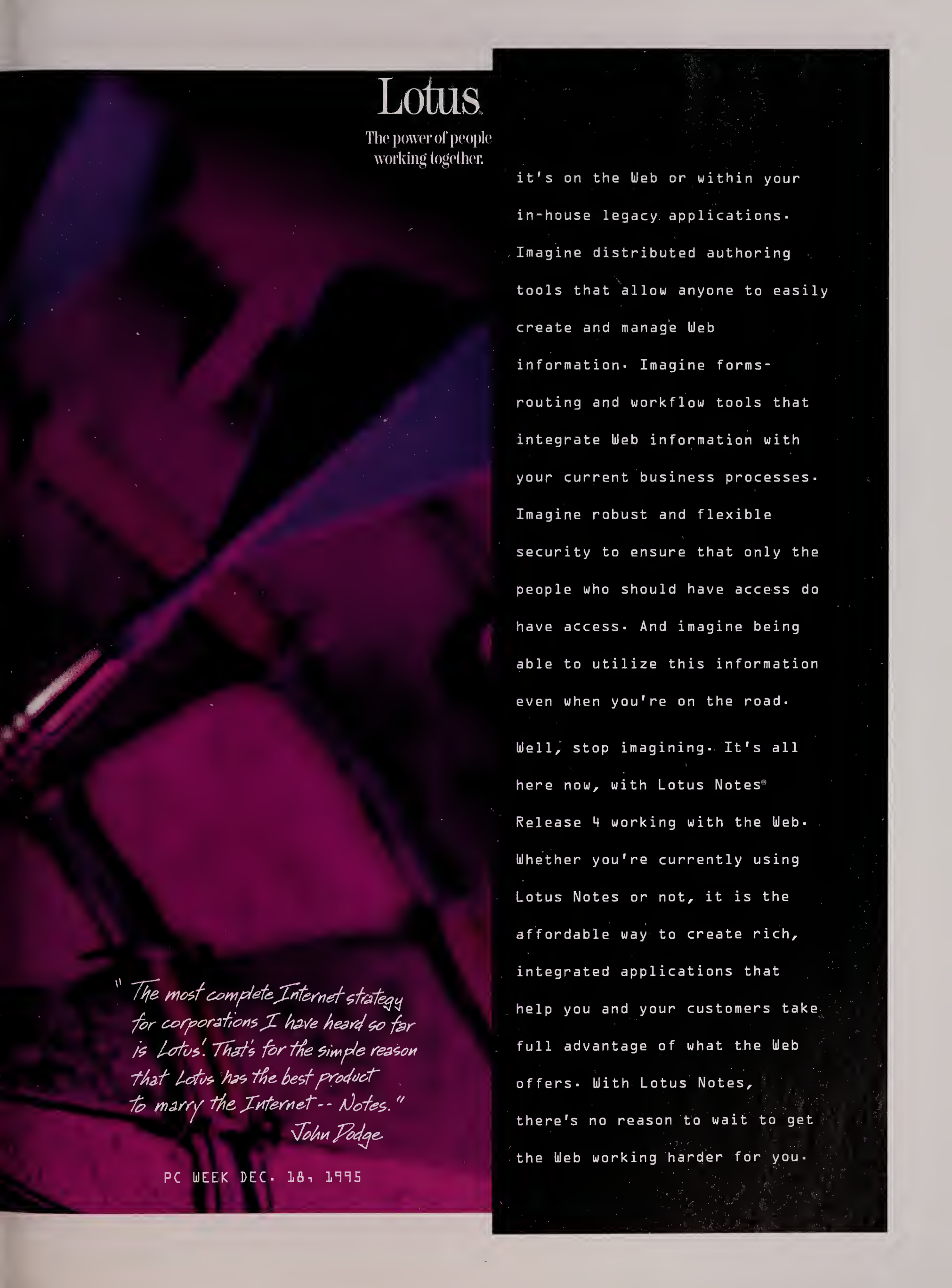
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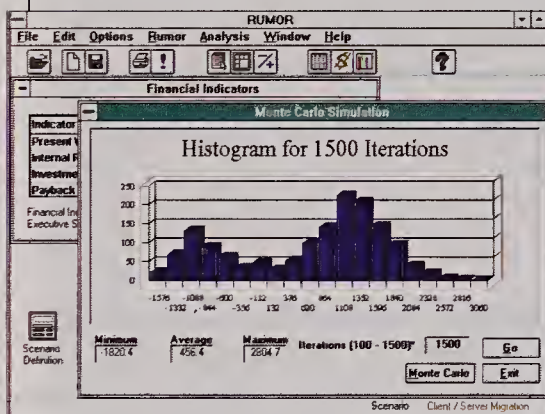
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True Lies

Convincing the powers that be to invest in technology projects can be tough for an IS executive. It's even harder when a heralded project is canceled during the development cycle because initial cost or scheduling estimates are over budget. D.W. Witte and Associates Inc., a Plano, Texas-based technology consulting com-



pany, helps IS managers avoid unrealistic budgets with its software tool, Rumor. Rumor enables users to review and analyze multiple aspects of project completion probability, budgeting and benefit/risk to gain a better basis for all IT investment decisions.

IT project managers can use Rumor to rapidly conduct a full life-cycle study without heavy clerical and calculation efforts. The program guides them through such functional areas as costs, benefits, cash flow, payback, internal rate of return, component risk and life-cycle risk. Rumor also provides project simulations, numerous reports, graphs and spreadsheets for review and evaluation.

Rumor is currently being offered at an introductory site license price of \$5,000. Systems requirements include an Intel Corp.-based 386 personal computer running MS-DOS 5.0 or higher or Microsoft Windows 3.1 or higher, a 3.5-inch floppy disk drive, a minimum 4MB of hard disk space and 2MB of available memory. For more information, call D.M. Witte and Associates at 214 964-7602.

Search and Rescue

That the World Wide Web can be difficult to navigate is hardly a shocking revelation. Currently, about 100 search engines exist on the Web, each with its own deficiencies. Until now, the closest you could get to a comprehensive search of the Web was deploying all available engines separately and then weeding out redundancies. Blue Squirrel Inc.'s SqURL (search and query uniform resource locators) products do away with the frustrating and time-consuming process by unifying multiple World Wide Web search engines into one searcher, thereby eliminating redundancy.

SqURL Jr. is designed for light Internet users. This base program unifies three search engines—America Online Inc.'s WebCrawler, Yahoo Corp.'s Yahoo and Microsoft Corp.'s Internet Explorer—into one searcher and can be downloaded at no cost



from the Internet. Users who need more exhaustive search capabilities might want to step up to SqURL. The \$19.95 program incorporates five search engines but comes with a certificate for 15. As the company develops new search modules, it will e-mail them free of charge to the user until the 15th engine is reached.

SqURL Plus is intended for more serious Internet users. Designed to run unattended, SqURL Plus costs \$59.99 and comes with five search engines—with a certificate for 25 total—and Blue Squirrel's efficiency pack, which allows unattended operation.

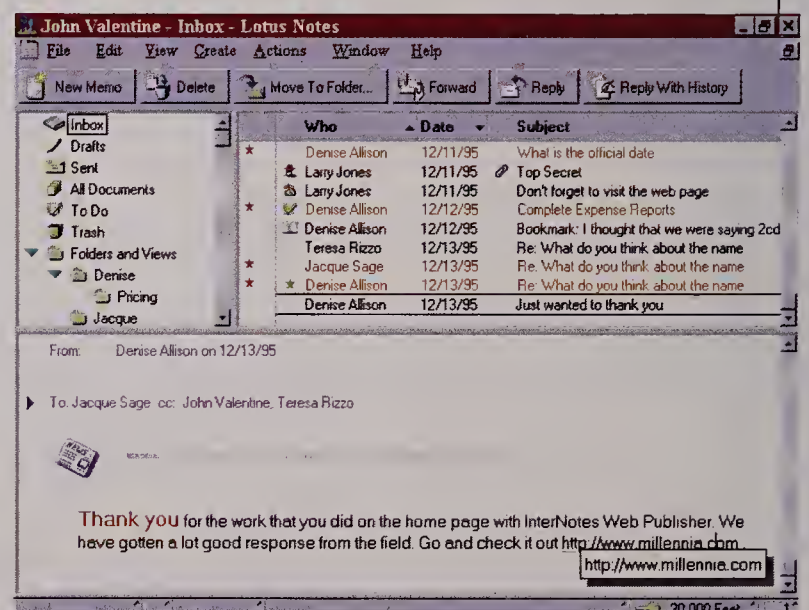
Blue Squirrel is currently developing additional search modules for existing and new search engines as they come online. All SqURL programs can be obtained through Blue Squirrel's home page at <http://www.bluesquirrel.com>.

Special Delivery

Today's IT executives are charged with both consolidating heterogeneous e-mail systems and building an enterprisewide messaging infrastructure. Lotus Development Corp.'s messaging system, Lotus Notes Mail, helps deliver both.

Utilizing the user interface from cc:Mail, Lotus's file-sharing e-mail system, Lotus Notes Mail offers a simple-to-use mailbox for novices and gives power users quick access to the message-management tools they need to process and organize large volumes of mail. The program includes customizable mailboxes, search capabilities, a word processing editor, object linking and embedding (OLE) 2.0 support for Windows clients to embed spreadsheets or word processing documents, and type-ahead addressing that helps eliminate misdirected mail. A task-management application enables users to create and manage to-do lists, and an InterNotes Web Navigator lets users send and receive messages with embedded uniform resource locators (URLs).

The estimated retail price of Lotus Notes Mail is \$55 per seat in quantities of 50 licenses; Notes server software costs \$495 for single-processor systems and \$2,295 for multiple-processor systems. For more information, call Lotus at 617 577-8500.



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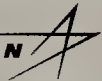
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mouth, and I must say I'm not surprised. You are about to say what all serious students of comparative management paradigms always say at this point: "What about *The Dick Van Dyke Show*?" Well, you can just put that tired card back in your sleeve, my friend. Yes, I admit that the harmony that exists among Rob, Buddy and Sally represents all that is worthy and admirable in collaboration. But (and this point is absolutely key) it's only television! You know as well as I do that no workplace like that ever existed in the real world! And anyway, who can forget the episode in which Rob discovered that an old Army buddy, with whom he had "collaborated" on a song, had tricked him out of the rights and then gone on to record it? Even Dick Van Dyke was occasionally forced to recognize the dark underbelly of mutually supportive labor. Cooperate and be coopted. Perfidy, thy name is partnership.

By this time, I expect, you are smiting your forehead, rolling your eyes heavenward and wailing, "How could I have been so deluded?" But please, don't upbraid yourself. The collaboration myth has been aggressively propagated by scores of self-serving characters who are collectively besmirching that noblest of all healing professions: consultancy. Fortunately, I, Ezra Poundcake, am here to lead you to the light.

Ironically perhaps, this time I am not alone. You may remember that last October, Jim Manzi—founder, CEO and all-around head cheese of Lotus Development Corp.—departed Lotus amidst rumors of power struggles resulting from its acquisition by IBM. But in fact, Jim—or "Mr. Manzi" as we in the "inner circle" are invited to call him—was driven from Lotus not by politics but rather by a crisis of conscience: He had lost all faith in the company's mission.*

Mr. Manzi, you see, had experienced an epiphany the previous August when he attended my popular seminar "Groupware or Dupeware? The Corporate Road to Splendid Isolation." After the session, which

was held, as usual, in the luxurious "gymnasium" of the Ron Popeil Middle School, Mr. Manzi declared that my message had changed his life. Collaboration, he realized at last, was an unparalleled evil and Notes a tool of the devil. Rather than continue to ply his trusting acolytes with groupware, he would quit Lotus immediately and either seclude himself in a monastery in Tibet or start up a new software company with myself as hollow figurehead. I will never forget his parting words, which thundered down the hallway: "What Lotus hath joined together let no man but Poundcake put asunder!"

The upshot of all this is that for the past few months, Mr. Manzi has been bunking down on the Castro Convertible in Jack-O, my webmaster's, rec room. There, fueled by youthful idealism and Little Debbie brownies, the three of us have sat up countless nights brainstorming a business plan for our new company: Divisive Technologies Inc. Simultaneously, we have been working on a suite of antigroupware applications collectively known as Soloware: Products for the Uncommunicative Workplace. (In addition to Mr. Manzi's and Jack-O's technical expertise, we were fortunate enough to recruit for this effort the legendary high-tech entrepreneur Wafer Ramsey, inventor of the edible silicon chip and the self-scraping cockatiel perch.)

Release 1.0 of Soloware, which is currently being beta-tested by several major corporations including Copper Enameling on the Square Inc. and Crullers 'N' Things PLC, contains a number of features so unique that not only does nobody else have them, nobody else *wants* them. These features include the following:

Version/Aversion Control: Anyone attempting to access a file being used by another employee receives a nasty electric shock of a voltage to be determined by the systems administrator. This should effectively discourage people from working on anything that involves others.

Remote Inaccess: Mobile employees dialing into the system from the road will receive a message that the business has closed up shop and

moved and that everyone in the company has taken an oath not to reveal the new location.

Voice Distortion: Video- and teleconferencing sessions will become high-tech "telephone"-like games in which sentences such as, "We'll need the specifications by Tuesday," are received as, "This thing on my nose was not there this morning."

Executable E-mail: Just try sending some. Go on, we dare you.

Of course, we all know by now that technological change is rarely successful unless it is accompanied by cultural change, and we at Divisive Technologies are prepared to help you with the "soft stuff" as well. Toward that end, we have recruited a crack team of professional debunkers—many of them veterans of the TQM and reengineering movements—who will help lead your organization down the treacherous path to total isolationism. Our approach is to reach that goal gradually: Rather than overwhelming your employees by forcing them to instantly become true islands of information, we first create isthmuses of information and then archipelagos of information. Yes our methods are a tad unorthodox, and permanent staining is possible, but that's a small price to pay if we can excise—now and forever—the cancer of collaboration from your organizational marrow.

So call Divisive Technologies today, and let us start severing those pesky lines of communication. You can take it from Ezra Poundcake: There's no company like a company of strangers. 

*This is a humor column. All references to Mr. Manzi and what has occurred at Lotus are completely fictitious and meant in good fun.

Ezra Poundcake, the former crossword puzzle editor of TV Guide, is co-founder, mascot and shameless corporate shill for Divisive Technologies, and the intellectual muscle behind Ezra Poundcake's Home Page for Cybersavvy Business People (<http://www.cio.com/WebMaster/wmezrahome.html>). Ezra's correspondence, such as it is, is handled by his longtime amanuensis and scapegoat, WebMaster Executive Editor Leigh Buchanan (buchanan@cio.com).

We have a chart, they have a chart.

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did we mention they have a chart?

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The Lone Ranger

I've been giving this whole unhealthy groupware phenomenon considerable thought of late, and I've come to the conclusion that it's the fault of Harrison Ford. Groupware, after all, has its philosophical underpinnings in the notion that collaboration is in some way "good," and—not to belabor the obvious—that idea became widely accepted only after the American movie-going public was subjected to that stupid barn-raising scene in *Witness*. So, although he has since redeemed himself with the pulse-pounding computer-printout race in *Clear and Present Danger* (in the process justifying my long-held belief that typing skills are the truest indication of machismo), I will never forgive Mr. Ford—rugged everyman though he may be—for introducing this blight into the American workplace. I suppose we should just be grateful that all our executive parking spaces aren't filled with horse-drawn buggies.

"But what's wrong with collaboration?" I hear you cry. "I participate on several teams; I communicate regularly with colleagues from around the world; I took a week-long seminar on how to achieve group consensus; and gosh-darn it, I've never been more productive or fulfilled in my entire life!" Well, welcome to the reality factory, kemo sabe. Collaboration is the greatest hoax perpetrated on U.S. business since salad bars started replacing make-your-own-sundae tables in corporate cafeterias.

To hell with
working together!
If it can't
be done without
the interference
of others, it
probably isn't
worth doing at all.

BY EZRA POUNDCAKE

And while I certainly wouldn't argue with Barbra Streisand that people, people who need people, are the luckiest people in the world, I have concluded after hours of exhaustive research that collaboration is what in less polite times would have been called a crock full of hooey. What begins as a rosy tableau of creative synergy and mutual support invariably descends into disorder, discord or downright treachery. Consider the following case studies, drawn from the media, advertising and banking industries:

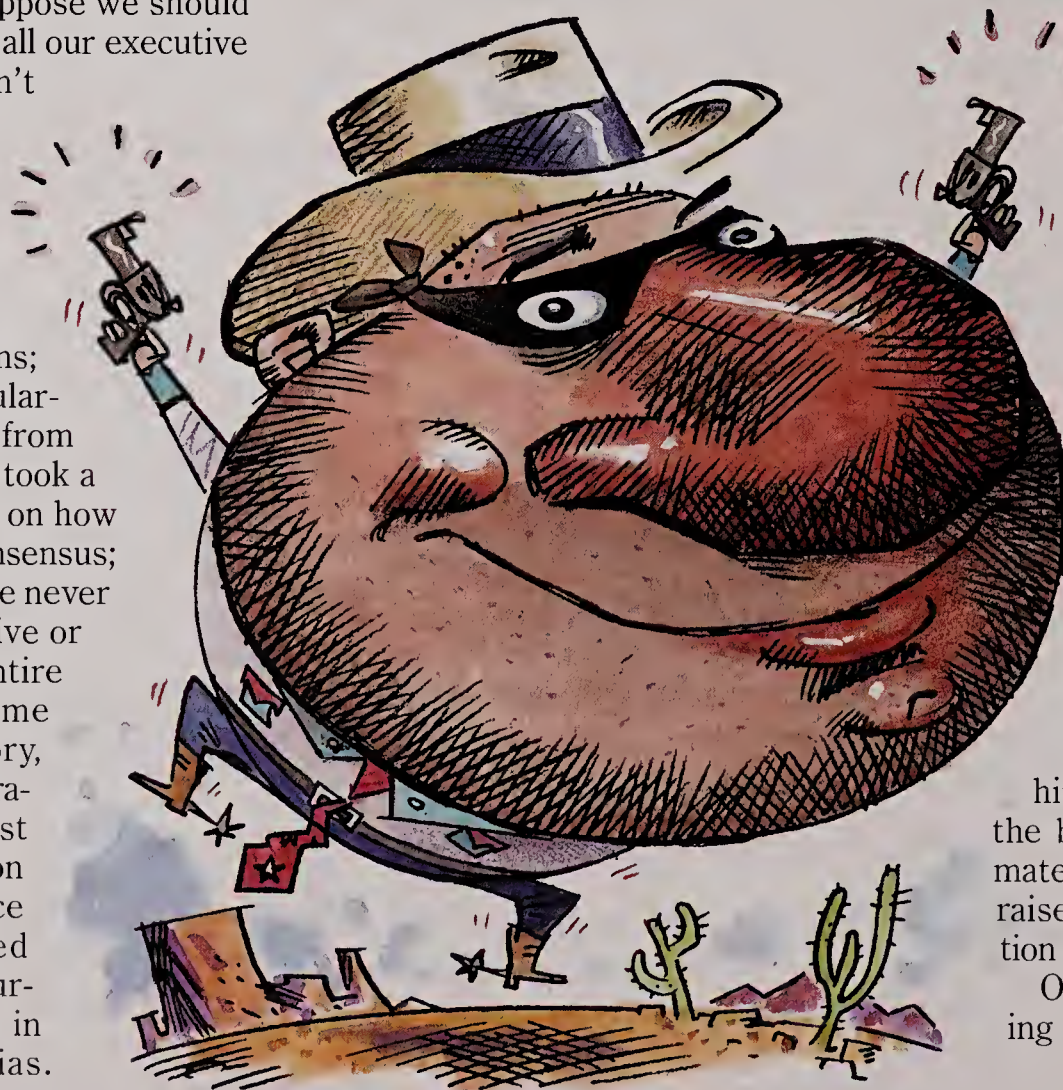
■ On *The Mary Tyler Moore Show*, the only time Lou, Mary, Murray and Ted were actually shown "collaborating" on a project—in this case a live report from a singles bar—the segment flopped, and Ted was forced to extemporaneously fill four minutes of air time.

■ On *One Day at a Time*, Anne Romano, portrayed by wildly underrated thespianess Bonnie Franklin, offered to "collaborate" on an ad campaign with designing newcomer Francine Webster, who then presented it to the boss as her own work.

■ On *The Lucy Show*, Mrs. Carter temporarily achieved parity with Mr. Mooney when she "collaborated" with him to get his job back at the bank. But she was ultimately denied her promised raise and returned to a position of servility.

Oh, I see that smile lurking at the corners of your

Continued on Page 86





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"Excuse me,
my
connector
is ringing."

Did she say connector instead of phone? Well, if she's from AMP it's understandable, because we've asked our people to think of anything that provides connectivity, even between people, as connectors. Usually thought of as pieces of plastic and metal sitting on circuit boards or ends of cables, connectors are being redefined. We're broadening their definition to include the circuit boards and cables, seeing connectors as entire signal paths – from where they're generated, to where they're received. Redefining connectors has led us to add certain technologies to our company, like circuit boards, cable assemblies, sensors, optoelectronics, and wireless components. And we bring these technologies together to create proven connectivity subsystems that our customers can drop into their designs – giving them a better way to solve problems brought on by faster chips, shrinking form factors, and shorter development times. So while we don't expect everyone to think of phones as connectors, our customers benefit because our people do.

Connecting
at a
HIGHER
level.